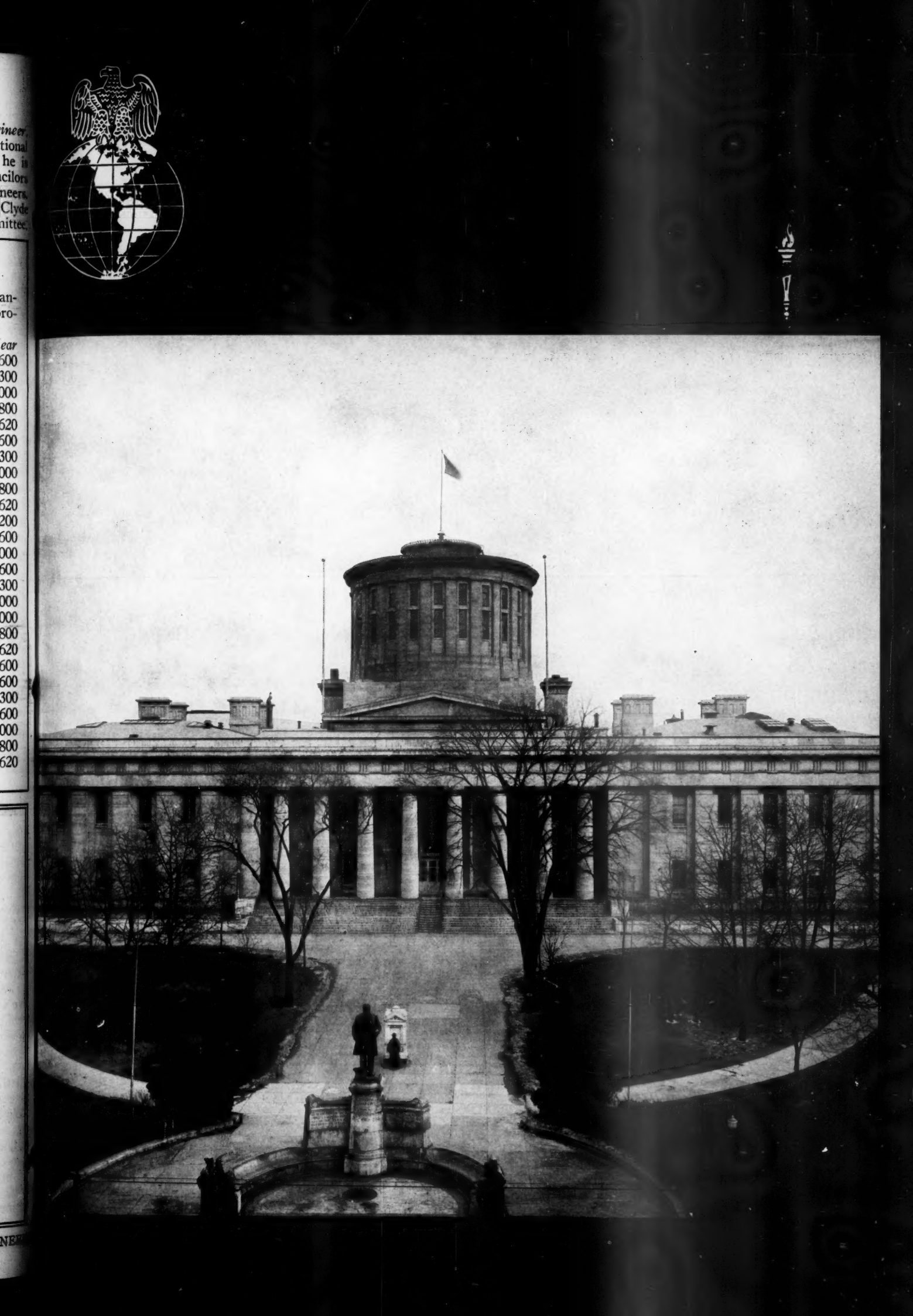

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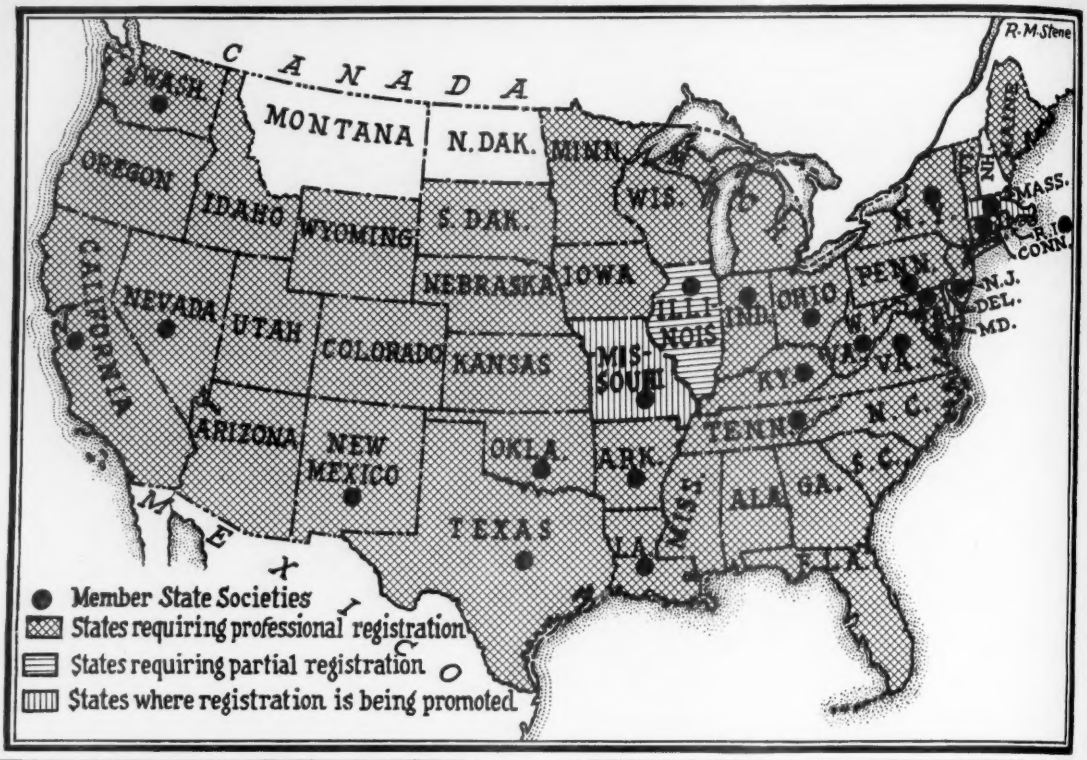

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Editorial Staff

ROBERT HALL CRAIG
Editor-in-Chief

ARTHUR V. SHERIDAN
Associate Editor

EDWARD LARSON
Business Manager

Editorial and Advertising Offices
222 North Third Street
Harrisburg, Pennsylvania

EXECUTIVE OFFICE
National Press Bldg., Washington, D. C.

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The Cover

In tribute to Ohio Society of Professional Engineers we print the State Capitol Building at Columbus as our cover.

O.S.P.E. recently adopted a new constitution which places that society in the organization form of the other constituent N.S.P.E. state societies—individual membership is local, state, national.

EDITORIALS • • •

We Want Ohio

The President of the Ohio Society of Professional Engineers announces, through the Society's news bulletin, that the problem of amending the constitution to complete the closed triangular form of organization, whereby all members become members of a local chapter, the State Society and the National Society of Professional Engineers, and pay one dues for all three, has been submitted to the membership of the Ohio Society of Professional Engineers—and approved.

Now the issue is to be submitted to the local chapters throughout the state, so they may revise their local constitutions or by-laws to conform to the new state constitution.

We who have been so intimately associated with the growth of the National Society, are happy and proud to hear of the Ohio Society's action, and we hope the movement will continue down through all chapters, for there is everything to be gained and nothing to be lost. Local chapters and state societies retain their autonomy, and yet are merged with a national organization of twenty-three state societies, which are collectively representing the professional engineer in most matters effecting his social and political standing—yet not encroaching on the technical field.

We want Ohio to be one of the strongest societies in the group! It has that opportunity!

The Engineer Draftee

The young engineer who is drafted, will be concerned principally with the hope that he will find engineering work in the Army which will add to his broad knowledge, and aid him in his life's work after he is discharged.

During the World War of a generation ago, it was a standing vaudeville joke that the carpenter of civil life became the baker of military life—or, in other words, the civilian "round peg" was placed in the military "square hole."

We understand it is the intention of the army officers that this draft will be "different," and there will be some attention to segregating talents, more especially those resulting from long scientific training.

For the young Engineer draftee, who is not as yet licensed as a professional engineer in his own state, we hope the military authorities will see fit to use him in an engineering capacity so that he may use his talents to the fullest, which would benefit the nation most, and also add to his practical experience in the engineering field.

It has been suggested that State Registration Boards for Professional Engineers might give consideration to allowing credit in future licensing for periods of military training, at least if that training bears some relationship to engineering work.

The happiest solution is to use the young engineer in the Army as a young Engineer.

—ROBT. HALL CRAIG

Engineering Education and World Revolution

By C. HALE SUTHERLAND

Head of the Department of Civil Engineering, at Lehigh University, Bethlehem, Pennsylvania; and Chairman of the Educational Committee, National Society of Professional Engineers

The demand of the professional engineers of the United States that henceforth education for engineering be conceived and carried out on a far higher plane than the narrow vocational sequences of the present is made because the practitioner has found that his own formal education has failed to equip him properly for the broad responsibilities of his calling. Increasingly he has found himself in situations where there was demanded of him broad understanding of our social and economic pattern and process, and he has been made to realize that his schooling failed to provide foundation in social science at all comparable to that supplied in technical science. Increasingly engineers are rising to positions of high responsibility in business and so there is stimulated in the professional group a desire to exert constructive leadership in a civilization which has not yet learned to function after the pattern inevitably suggested by modern applied technology.

Practising engineers and engineering educators are proposing various remedies for this deficiency of American technical training Notable among these proposals is that of the National Society of Professional Engineers, advocating[1] at least two years of pre-engineering college training as prerequisite for admission to engineering school. This is a very sound proposal indeed and our Society should be active in its urging, but it is imperative that we realize that in it there is a basic weakness: it assumes that the liberal college of today gives to its graduates, or is ready and eager to give, this social sympathy and understanding so needed on the modern scene. The observed differences between arts graduates and engineering graduates do not justify this assumption. These days of world crisis are compelling general recognition of the social inadequacy of our liberal educational system.

Both within and without our American colleges it is being widely realized that we have failed to train our young men and women for democracy. We have trained them well to enter the individualistic struggle for success and competency, but we have not given them an understanding of the basics of American democracy sufficient to send them out into life determined to do their share in building the American Commonwealth of plenty, of freedom and of such measure of equality as the natural endowments of men permit of realization. And so this world crisis finds altogether too much of division amongst us, too much self seeking and too little community and human loyalty, too much corruption in economic and political life. The totalitarian states look upon us with professed contempt as undisciplined, pleasure seeking, soft, hopelessly divided amongst ourselves, and this contempt and the danger which it shadows are shocking us awake as never before, awake to the values of our way of life and its vast significance for the progress and happiness of mankind.

Much of the criticism directed at education is hopelessly shallow. It is not enough to demonstrate that we have failed to train for democracy; we must perceive clearly the essential basis of democracy and understand how much in the intellectual advance of a century past undermines our faith in democracy.

Democracy has its origin essentially in philosophic insight, perception that in the core of his being man is linked to the universal source of all manifestation, that he is scion of Universal Spirit. No matter how much evil and wrong doing may cover that core, deep within every man is this divine substratum, a deep within which may be appealed to and touched far oftener than most of us imagine. All the great world faiths are at one in this assertion of the divine essence of man's inner self and in one fashion or another each has endeavored to incite the outer everyday man to discover and make manifest the real within. The highest insights of the race thus proclaim democracy as founded on the great natural fact of the brotherhood of man, potentially divine offspring of the Cosmic Root Life and thus each a working cell in the living organism we call the world order.

Individual health depends upon practical recognition of this profound relationship. Man finds he cannot live to himself alone. His very nature drives him out into loyalty to family, to clan, to nation, race, to the Supreme All. If he stops at some lesser loyalty we find group selfishness, racial pretension, totalitarian nationalisms. If he fails to enlarge his littleness in loyalty man is easy prey to those nervous ills and insanities so largely increasing today.

The rise of science in the past century has resulted in an intellectual atmosphere largely hostile to the spiritual concept of life, a conflict of evaluation entirely unnecessary, illogical, due to fatal misunderstandings on part of scientist and religionist alike. There is not opportunity here to set forth this tragedy.[2] As a result much of our education tends to discount the spiritual basis of life, its value and significance. Education has become secularized and materialistic philosophy largely dominates. Our college young people are largely spiritual and religious illiterates, fatally ignorant in that all-important sphere of understanding which supplies the binding element in our complicated social order.

This brief summation of the situation in liberal education suffices to indicate in broad outline the specification which the National Society of Professional Engineers must set forth to define and order the humane side of the education of the young men who are to follow us and carry on the work and traditions of the profession. So radical an advance as increase in the time given engineering and pre-engineering training may perhaps be slow of realization. The time is ripe however for acceptance of our insistence that the engineering schools establish a humanistic core of study, substantial and dignified, extending through all the years of the present programs, a core of study which will acquaint the student with the organization and operation of all the major elements of

[1] Resolution No. 3, Annual Convention N. S. P. E., October, 1938.

[2] Gerald Heard gives a competent exposition of this misunderstanding in his THIRD MORALITY.

our democracy, its social, economic and political aspects. Those systems which oppose democracy must also be studied for only as we have understanding of our fellow of different faith can we consult with him and arrange so that our mutual contacts be peaceful and constructive. It will not be enough to instruct in organization and operation. Factual study is largely barren as present experience indicates. We must touch those deeper levels of life whence spring loyalty, faith, aspiration, good will, and to do this we must return to large consideration of the great world philosophies and faiths. Humane, universal religion must be a large theme in our thinking. Here we shall encounter difficulty for the men for this educational task are few and often now unrecognized. And to book learning we must add social action for community good. Out of such action loyalty springs more freely far than from thought in the study. The two must go hand in hand.

Religion has been so commonly a source of division among men that some may consider all this impractical or Utopian. This objection will not be raised by those familiar with the increasing cooperation between Jew, Catholic and Protestant in this country. With surprising agreement these three groups have set forth independently their ideals for a democratic commonwealth. The world crisis is forcing unity upon us.

Others will oppose this program as demanding a return to medievalisms of thought and attitude utterly discredited by science. So genuine a criticism deserves a more gracious answer than the brief one which alone is here possible. This is but a voicing of that tragic misreading of the situation to which reference has already been made. Our modern understanding need not rest upon those anthropomorphic concepts once deemed all important; nor does science demand a materialistic interpretation of life. In fact there are scientists today who give us hints that physical science is advancing to a basis more spiritual than material.

We stand at one of the great turning points of history. Many would say that the greatest revolution of all time is proceeding around us. This revolution has come in all its violence because man has lost sight of his group kinship and his common root source, because he has increasingly centered his attention upon his own individual aims and work, with lessening loyalty to group and Source.[3] But man cannot survive without loyalty to lead him beyond the prison of selfhood, and so lesser loyalties, nation or race, have been set up in displacement of supreme loyalty to humanity and its Author. And so conflict has sprung up which threatens to end democracy for centuries to come. There is no need to repeat the obvious duties laid upon engineers relative to the physical defense of democracy. If democracy is to survive the totalitarianism now being forced upon it in its resistance to other totalitarianisms which seek to destroy it, far more important is it that there be nation wide return to simple faith in the divine worth and potentiality of man which is the basis of democracy, nation wide turning to mutual good will, the dropping of selfish individual and group aims in common loyalty to the democratic ideal of the American Commonwealth. The only common element of life sufficiently authoritative to command this action and this loyalty is religion, a purified religion, divested of its exclusive and competitive elements and centered in its common and universal elements. With this awakening men will discover that unity is a psychological fact of nature, not a rhetorical concept nor a pragmatic ideal. As our Society plans a program of education centered on spiritual faith in the worth of man and the dignity of his life, we are centering upon that element in life which alone can empower man to work out his destiny to its high and happy possibilities.

* * *

(Note: The Educational Committee of our Society bears a name of two fold significance. Its responsibility relates to the educational program in our engineering schools and its work is to educate, that is to inform and convince, engineering practitioner and engineering educator of the educational ideals of the Society. Of itself the Committee can do little. The work demands the active thought and cooperation of every member and every element of our organization. Here is theme for many conferences and public meetings. As we make it plain that our Society loyalty is to this large conception of our professional responsibility it would seem that all professional engineers will wish to associate themselves with us for this work, which is larger than the mere shaping of the training of technologists, which aims indeed at the rededication of our national educational process to that spiritual faith we name the democratic ideal.)

[3] Cf. Gerald Heard's Source of Civilization.

Announce Nominees for New N.S.P.E. Officers

The Constitution of the National Society of Professional Engineers sets forth the following regarding the election of officers:

ARTICLE V—OFFICERS. The officers of the Society shall be a President, four (4) Vice-Presidents, one chosen from each of the major areas of the United States as determined by the Board of Directors, a Treasurer and an Executive Secretary who shall be appointed annually by the Board of Directors. The officers and directors shall take office on January 1st next following their election and shall hold office until the following January 1st or until their successors have been duly elected and qualified.

ARTICLE VII—NOMINATIONS. Nominations for officers shall be made by a committee of five (5) who shall be appointed by the Board of Directors. Additional nominations may appear on the official ballot upon petition of fifty members, all of whom must be in good standing.

ARTICLE VIII—ELECTIONS. Elections of officers (except the Executive Secretary) shall be made annually by plurality vote on individual letter ballots sent to all members in good standing of the National Society.

The Nominating Committee:

George F. Randolph of New Jersey, Chairman
Russell B. Allen of Maryland
H. J. Darcey of Oklahoma
Perry T. Ford of Ohio
J. H. Morgan of Illinois

Your Nominating Committee makes the following recommendations as nominations for officers of the National Society for the year 1941:

For President—J. W. Beretta, 1203 Nat'l. Bank of Commerce Bldg., San Antonio, Texas.

For Vice-Pres.—H. J. Darcey, 2036 N. W. 17th St., Oklahoma City, Okla.; Alexander S. Lynch, 114 Chestnut St., West Haven, Conn.; Samuel I. Sacks, 921 Widener Bldg., Philadelphia, Pa.; Donald H. Walker, 428 Utility Bldg., Fort Wayne, Ind.

For Treasurer—Walter L. Simpson, P. O. Box 6, Ben Franklin Station, Washington, D. C.

Cooperation and Collaboration Between Architects and Engineers

By M. EDWIN GREEN

Secretary, State Board of Examiners of Architects for Pennsylvania

Acceptance of Invitation to Speak

When your president asked me to speak at your dinner this evening I immediately accepted with pleasure, not because I fancied myself as an after-dinner speaker but because I have some things that I want to discuss with you which are of considerable importance to me and I feel will be of importance to you. Some of the things will be pleasing for you to hear; others will be unpleasant, but a frank discussion of mutual problems may be of benefit to us all.

Cooperation—Relationship to State Board—Future Program

The problems which I wish to discuss have fallen, actually, into three groups: That is the Cooperation between the Engineering and Architectural Professions, the Relationship of the State Boards of Examiners of Architects and Engineers to the members of the profession, and thirdly, a future program of cooperative effort for the two professions.

Historical Background

As to the cooperation between the Architects and Engineers, I feel that this could best be presented as a matter of historical background leading up to the present time.

Hostility Before 1938

To the best of my knowledge, prior to 1938, serious consideration had never been given to the possibility of the Engineering and Architectural professions cooperating even though *their professional and business interests were very similar* and their educational and technical training paralleled to some extent.

As a matter of fact, I might venture to say that from time to time there were real *overt acts of hostility* between the two professions.

Architects Bill of 1937

I can recall an incident to illustrate this point: It occurred during the Legislative session of 1937 when a bill was introduced in the Legislature making some revisions to the Architects Act.

Unfortunately this bill was not a *spontaneous expression of the architectural profession*—on the contrary the architectural profession was generally, entirely ignorant of the fact that the bill was being introduced.

The revisions suggested were, I believe, rather innocuous but it aroused a strong opposition on the part of the Engineers.

As a result of this *lack of cooperation,* the bill was *quietly laid to rest* in the pigeon-hole of some State Committee and, I believe, assisting at the "wake" were Bob Craig, Irv Geiger and, I always suspected, Colonel Myers may have participated in the celebration although I have no authority to make this statement.

Having an engineering partner, I have always felt a great deal of *sympathy for the viewpoint of the engineers* and have understood their problems more thoroughly than many members of my own profession.

Accomplishment by Cooperation

I have always felt that the engineering profession, as a whole, were a most reasonable and logical group and with their field of interests so close to ours, it would seem that a great deal more could be accomplished for both professions by cooperation than by mutual mis-trust.

Marlier Appoints Committee to Cooperate

I, together with some other Architects, *preach this gospel* at the various gatherings of the Architectural profession and it eventually bore fruit in May, 1938 when President Marlier of the Pennsylvania Association of Architects appointed a committee to cooperate with the Engineers of the State of Pennsylvania in order that—*to quote—"Better relationships might be established between the two professions—to consider ways and means to be of mutual assistance in the honorable aspirations of the two professions—and, to discuss legislation which might be of mutual interest to both engineers and architects."*

I had the honor to be chairman of that committee.

We soon found out that the Pennsylvania Society of Professional Engineers was the organization which was representative of the engineering profession and *Mr. Alex Hutchison,* then President of the Engineering Society appointed a committee of engineers to confer with us.

Meeting in Pittsburgh

The first meeting was held in Pittsburgh in October, 1938 at which time the engineers were ably represented by some of the outstanding members of the profession.

The problems of the two professions were discussed in great frankness.

At that time the propriety of architects performing engineering work and engineers performing architectural work was debated and the possibility of *establishing a Code of Ethics* satisfactory to both professions was, even at that early date, considered.

At this meeting the question of legislation was touched upon only incidentally.

Following this meeting in Pittsburgh, *Mr. Robert Hall Craig,* the new President of the Engineers Society reappointed a committee to continue our conversations with *Joseph Stastny* of Pittsburgh as Chairman.

Meeting in Harrisburg

A second meeting was held in Harrisburg in January, 1939 at which time eight engineers from Pittsburgh, Philadelphia, Reading, Allentown and Harrisburg found time to confer with six architect members and I think it is of *considerable significance* to note that these busy, representative, professional men found the meeting of sufficient importance to spend their own time and money to attend.

At this meeting the Committees agreed that they would assist each other in all common problems concerning legislation, practice and ethics.

This, you can readily see, was a tremendous advance from the time when we looked on the activities of each other's professions with distrust.

Discussion of Architects Act and Engineers Act

It was at this meeting that the weaknesses of the old Architects Act and of the present Engineering Act were discussed and at this same meeting a preliminary draft of the proposed changes in the Architects Act were presented for consideration.

I would like to read you an *excerpt* from the minutes of this particular meeting which I looked over yesterday for the *first time in nearly two years* and as a basic set of principles, seems to me to be worthy of the continued consideration of our two professions:

"In order to determine in general a course of action, it was agreed that certain cardinal principles should be recommended for adoption, as follows:

1. That it is the unanimous opinion of the Committee that there should be the two professions, leading to the encouragement and adoption of legislation and other actions desirable for the advancement of architecture and engineering and for the benefit and safety of the public.
2. That it is essential that legislation be enacted and enforced restricting only to legally qualified architects and engineers, the planning and supervision of all structures to be erected in the State of Pennsylvania involving the safety of the public and aesthetics.
3. That such legislation shall in no way be such that architects and engineers be excluded from designing and supervising such types of structures for which members of each profession are qualified by training to design and supervise.
4. That it is the sense of this Committee that both acts making mandatory the registration of architects and engineers be strengthened by amendment or the adoption of a complete new act so that the public shall be more fully protected by being required to employ a legally qualified architect or engineer to design all buildings involving aesthetics or public safety.
5. That a Joint Code of Ethics be developed and adopted by the two professions defining functions of each within the building construction field, including methods of practice, encouraging association between the two professions in the design and supervision of structures and providing for continuous cooperation and support between the two."

Sub-Committee to Consider Legislation

As a result of this meeting, it was decided that each profession was to appoint a small sub-committee to immediately review the existing Architects and Engineers Acts: particularly the proposed act covering registration of architects.

This sub-committee met in *three subsequent meetings* within the *next month* and at each meeting we were deluged with suggestions as to what should be included or omitted from the new Architects Act.

Passage of Architects Act

A suggested amendment to the old Architects Act was finally agreed upon by everyone concerned as being the best that could be done under the circumstances and was duly presented to and passed by the State Legislature in the Session of 1939 and signed by Governor James in June of last year.

Code of Ethics

After the Architects Act was out of the way, the next problem attempted by our joint committee was the preparation of a Code of Ethics to which both professions might subscribe. While I realize I *may be criticized for divulging the contents of a document* that has not as yet been approved by the committee, I am, nevertheless, going to read to you certain fundamental passages from this proposed Code of Ethics so that you might have some knowledge of what is in the minds of the committees who are in charge of preparing this Code.

You, of course, understand that this code in its final form will be submitted to you for your ratification.

In the meantime, if you have any criticisms, I would suggest that you make a note of them and address your criticisms to Mr. Stastny who is Chairman of the Engineers Committee.

Of course, there are many ways of making criticisms and I would suggest if you have any to make, for the benefit of your Chairman, you make them as constructive as possible.

Relationship with Board of Examiners

With this historical background of what has been accomplished in cooperation between the two professions, I would like to informally and "off-the-record" discuss with you the present relationship of the State Boards of Examiners of Architects and Engineers and the practical workings of this cooperative effort.

To the best of my knowledge, prior to 1940, there had never been any overt act of hostility between the Architects and Engineers; nevertheless, there had probably been a lack of sympathy and understanding.

Present Policy of Boards

I am now happy to report that a policy of mutual appreciation and helpfulness have been adopted by both the Engineers and Architects Board.

They have held joint meetings.

They have agreed on a policy of cooperation and collaboration.

It will no longer be possible for the architect to plead his case before a sympathetic Architects Registration Board in order to gain their approval of his performance of engineering work for which he is obviously not qualified.

Neither will it be possible for an engineer to plead his case to a sympathetic Engineering Registration Board in order to obtain their approval of his performing architectural work for which he is not qualified.

This has been a tremendous step in advance for the *honest consideration* of our *mutual problems* and for the protection of the serious practitioner in his endeavor to render competent service.

Duties of Boards

Basically the duties of both boards is to protect the public, to see to it that a man who holds himself up to be a registered architect or engineer is what he advertises himself to be and is competent to perform this service.

Along with the protection which the Boards offer to the public, they perform a service which is, without question, of considerable value to the licensed practitioner.

The Boards attempt to give careful consideration to the qualifications of those applying for registration and only register those who are ready to engage in practice.

As a practical result of these duties of the Boards, the competitive field in the professions is considerably narrowed.

They try to enforce the provisions of the Acts by two methods: one is by education; and the other is by prosecution.

Both of these Boards are subject to tremendous criticism and, while I think they welcome constructive criticism, they nevertheless deserve your sympathy and patience.

It is a considerable job to regulate the practice of 3655 Engineers and 1245 Architects, to the satisfaction of all concerned. Someone's toes are going to be stepped on

(Continued on page 20)

An Engineer's View of Engineering Education

Presented at the 48th Annual Meeting, Society for the Promotion of Engineering Education, University of California, in June

By D. B. STEINMAN

Past President, National Society of Professional Engineers

When President Ferguson invited me to prepare this paper for the annual meeting of S. P. E. E., I at first declined but finally yielded to his continued and cogent persuasion. The invitation is accepted as an indication of a sincere desire on the part of educators to get an outside viewpoint on their problems. This paper is presented at some sacrifice and in all sincerity, motivated only by a sense of professional obligation.

Since every man's philosophy is the product of his experiences, permit me to use, as an introductory documentation, a few brief sketches of actual, recent contacts with engineering education and its end-products.

* * *

I recently visited a Senior class in one of the accredited engineering schools, and was shocked to find that the individual students, shortly before graduation, were unable to answer my simplest questions on the work they were doing, although it was in their major subject. They were apparently producing a finished design by a routinized set of instructions, and their minds were a blank on the elementary, essential concepts underlying their work. Yet in two months these young men were going to be turned out upon the world as having completed an *"engineering education."*

* * *

One of the three examination papers given by the New York State Board of Examiners of Professional Engineers covers the basic engineering sciences which are supposed to be taught to all engineering students, generally in their Junior year. A wide selection of questions is offered, and the candidate is asked to answer only eight out of sixteen. Free use of all textbooks and reference books is allowed in the examination. The questions are prepared by engineering teachers, and the engineering educators of the state have approved this examination as eminently fair. Nevertheless *more than half* of the engineering graduates who take this examination are unable to pass it! A few years after graduation these young men prove themselves *ignorant of the basic fundamentals* they were supposed to have mastered in their college years.

* * *

A young candidate for a Professional Engineer's license was recently questioned by the New York State Board of Examiners concerning his past involvement in a matter of questionable professional relations. He was surprised to learn that the things he had done were violations of all the published Codes of Ethics of the profession, and he told us that he had never heard of professional ethics at college and had never seen a Code of Ethics before or after graduation!

* * *

A prominent engineering educator—a past President of S. P. E. E.—was proudly telling me that he was finally going to start a system of student selection at his school. I was thinking of the high standards of the medical schools, in which it is practically impossible for a young man to secure admission unless he stood in the top quarter of his class in his pre-medical college courses; and it was therefore quite a let-down when this engineering educator outlined his plan for selective enrollment: Any high school graduate who stood in the *bottom* quarter of his class at high school would be required *to present a letter from his high-school principal!*

* * *

Commenting on the low level at which most engineering schools start their curricula, with algebra and trigonometry taught in the Freshman year, I recently suggested to an engineering educator that, as a first step of progress, completion of high-school mathematics should be made a prerequisite for enrollment in engineering. He shuddered at the thought. He would be willing to go along with me, he said, to the extent of viewing such requirement as a long-range ultimate objective, but any thought of taking early steps toward that objective would be vigorously protested!

* * *

The other day a seedy-looking stranger timidly approached me on the street, begging for the price of a meal. A brief conversation developed the fact that he had studied engineering at a well-known university in the class of 1920. As he clasped my hand in stammering gratitude, there flashed through my mind the fine-sounding phrase recently penned by engineering educators for their guidance literature: "Engineering training will add power, understanding, and enjoyment in almost any walk of life."

The very next day an engineer called at my office, begging, as he put it, "not for a position but for a job"—any job to keep him from starving. He graduated in 1911 from one of the largest engineering schools in the country, had knocked about from job to job, was now staying at a lodging place for derelicts, and had only nine cents left to his name. (All of this was A. D. 1940, not 1932.)

* * *

If the foregoing vignettes of actual personal experiences and contacts were unique or isolated, you might say that they prove nothing; but they can be multiplied indefinitely. I have selected but a few that reflect directly on some of the facets of the problem of engineering education. To me they are significant and revealing. I believe they raise some serious questions to stir our complacency with the present picture of engineering education.

Are the engineering schools properly fulfilling the high trust reposed in them by the public and by the profession? Are they maintaining adequately high standards of selection and guidance of students, of true education, and of full preparation for a professional career? Are they progressively raising these standards to meet the increasing requirements of educational equipment for professional lifework? Are the engineering educators using their best energies for the advancement of these standards, or are they instead using their energies and resourcefulness in rationalizing and justifying compromises and evasions that prevent or retard progress?

Shall the program of education for the engineering profession continue to be geared to the lowest standards

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of high-school graduation, or shall it be geared to a desired end-result in terms of professional education and preparation? Must the engineering schools accept every high-school graduate who applies, however ill-qualified or ill-prepared?

Is there something sacrosanct about a four-year period of education after high-school graduation to which the engineering schools must cling at all odds regardless of overcrowding of curricula, inadequacy of scope, and serious limitations and shortcomings of the end-result?

Correction of a Misapprehension

In order to clear the atmosphere, I want to start by correcting a misapprehension that has been widely circulated in S. P. E. E. circles. I want to state, clearly and unequivocally, that *I do not advocate and have never advocated a numerical limitation of student enrollment.* I do not know of any group that is advocating numercial limitation of engineering enrollment. Despite my repeated protests and attempts to secure correction, my name has become identified with this hypothetical proposal; and the use by S. P. E. E. spokesmen and others of such phrases as "arbitrary limitation" and "numerical restriction" only serves to aggravate this prejudicial misrepresentation.

My position on this general subject, as I have recorded it in my published articles, is as follows: *I believe that the competitive drive of engineering schools for student enrollment should be discouraged. I further believe that the standards of admission into the engineering schools and of qualification into the profession should be progressively raised.* These measures are necessary to raise the quality, the standards, and the standing of the profession. If, as a secondary concomitant, these measures result in a reduction of the oversupply of engineers, such reduction should be welcomed, since an oversupply (at the sacrifice of maximum quality) in any profession is not conducive to the best ethical standards, self-respect, professional pride, high service, and public regard. There is a distinction between *welcoming a reduction* and *advocating a limitation,* and I am sorry that some engineering educators appear to be unable to grasp this distinction.

My views on this subject are shared by many in the profession, and are clearly recorded in the following resolution unanimously adopted at the 1938 annual convention of the National Society of Professional Engineers:

Resolution No. 1

Policy of N. S. P. E. Concerning Student Enrollment

Be It Resolved, by the National Society of Professional Engineers, in Convention assembled at Pittsburgh, Pa., on October 19, 1938, that the following is the affirmed policy of the Society concerning student enrollment in the engineering schools:

1. Although it believes that the engineering schools are enrolling and turning out prospective engineers in numbers beyond the capacity of the profession to absorb, the National Society of Professional Engineers is not asking for any arbitrary limitation of the number of students admitted to the engineering schools.
2. The National Society of Professional Engineers does advocate and urge quality selection of prospective engineering students on the basis of superior preparation and aptitude.
3. The National Society of Professional Engineers does advocate and urge a progressive raising of the level of qualifications for admission.

Prime Essentials

I believe that the criteria and the objectives of our engineering schools should be qualitative, not quantitative. *Quality, not quantity, should be the measure of success.*

I believe that the two prime essentials of any worthwhile educational institution are *teachers*—highly qualified, gifted, and inspiring—and *students*—properly prepared, motivated, and capable. Given these two essentials, all such factors as endowment, equipment, laboratories, and even curricula are secondary considerations.

Selection of Teachers

I believe that there is too much inbreeding in our engineering schools. The natural tendency for a school to select teachers from its own immediate graduates should be resisted and discouraged.

An associated evil is the engagement or continued retaining of teachers who have had little or no real outside experience in professional practice. The students are thus deprived of necessary elements of professional education—the practical applications, the engineering approach, the training of engineering judgment, the background of experience, the inspiration of achievement, and the professional viewpoint.

The New York State Board of Examiners of Professional Engineers will not accept mere teaching as satisfactory qualifying experience, but insists upon a reasonable amount of actual outside experience in engineering practice. In maintaining this requirement, the Board feels that it is doing a service to the teacher, the students, the school, the profession, and the public.

In addition, it should be realized that preparation for a teaching career is not necessarily identical with preparation for engineering practice. A broader educational base should reasonably be expected than is now generally required for engineering degrees. Adequate preparation for a teaching career, among other essentials, should include the study of educational psychology, of teaching methods, and of the history and philosophy of education.

Finally, how many of the teachers in our engineering schools really know how to teach? How many of our engineering teachers know how to inspire the students, to teach them to think, to make them grasp and retain fundamental concepts, to train their engineering judgment, to stimulate their originality and resourcefulness, to give them the professional viewpoint, and to inspire them with high ideals and a love for the profession?

Until all these things are considered in the selection of teachers, and not merely undergraduate proficiency or graduate degrees, engineering education will be found wanting.

Selection of Students

There is little hope of raising the standards of engineering education as long as the schools obstinately cling to their belief that it is their duty to admit any graduate of any high school, however lacking in aptitude, preparation, or capacity. It may be true that some of the "Land Grant" colleges are under statutory requirement to accept any high school graduate, but that does not necessarily mean direct admission into the engineering school of the university, nor does it mean that all other engineering schools are under similar compulsion to keep their standards down.

The enrollment of any student lacking in aptitude, preparation, or capacity is an injustice to the student, to his classmates, to the school, to the profession, and to society.

The charter of the Engineers' Council for Professional Development, adopted upon formal organization in 1932,

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Architects and the National Defense Program

(from The Octagon)

We are printing here abstracts from a message by Edwin Bergstrom, President, The American Institute of Architects, as published in *The Octagon*, a Journal of the American Institute of Architects—because it is the best written description we have so far seen regarding the whole program of building projects for National Defense.

It should be of interest to professional engineers, more especially those who are civil engineers, to determine their opportunities for assisting Our Country.—The Editor.

JULY MESSAGE

(Note: In the June Octagon I promised to keep the members of The Institute informed of the progress of its preparedness program and the position of the profession with respect to the building work of the national defense program. That position has not been sufficiently crystalized heretofore to make any statement, and the July Octagon has been held from day to day until a definite announcement could be made.

Even now the situation has not cleared with respect to all phases of the building work, and any statement I make in this message may be inaccurate tomorrow, so rapidly do situations change.)

The Preparedness Committee

The work of the Preparedness Committee of The Institute has been extremely arduous and has required the greater portion of the time of its members during the last month.

The chairman of the committee, past president Stephen F. Voorhees, became one of the six members of the civilian committee appointed by the government to advise the Joint Army and Navy Munitions Board. This Construction Advisory Committee, in addition to Mr. Voorhees, consisted of the following men eminent in the construction industry: —Col. John P. Hogan, president of the American Society of Civil Engineers; Alonzo J. Hammond, president of American Engineering Council; E. J. Harding, general manager of the Associated General Contractors of America; E. P. Palmer, former president of the Associated General Contractors of America; and Malcolm Pirnie, general chairman of the Construction League of America.

The Joint Army and Navy Munitions Board consists of the Assistant Secretaries of War and Navy and their aides. It has conferred with the Construction Advisory Committee almost weekly since late in May on matters concerning the relations of the construction industry to the defense program. A month ago Mr. Voorhees was appointed to another governmental post and he was succeeded on the Construction Advisory Committee by past president Ernest J. Russell. Hereafter, it is the intention of that committee to meet fortnightly.

The construction industry became represented on the Advisory Commission to the Council of National Defense about a month ago when Mr. William H. Harrison, vice president of the American Telegraph and Telephone Company, was appointed by Mr. Wm. S. Knudsen to be head of the construction division of the production department of the Commission. Mr. Harrison immediately appointed past president Voorhees as his consultant, and Mr. Voorhees has been spending not less than three days every week in Washington performing the duties of his new office. Under the general procedure of the defense program all matters of general policy relating to building construction for defense will be cleared through the construction division of the Council of National Defense, and architects, engineers and contractors selected for defense projects, and their contracts, must have the approval of the Council before the contracts go into effect.

The Preparedness Committee of The Institute has done an effective work. Two past presidents of The Institute have been placed in important key positions in the defense program, and the survey of the profession has been completed. The ten members of the committee received and classified more than 7800 questionnaires and returned them to The Octagon. The committee has completed its duties exceedingly well, and The Institute extends to its members its great appreciation of the services they so conscientiously and ungrudgingly furnished.

To carry on from where the Preparedness Committee completed its work, The President, The Secretary, and Director Edmund R. Purves, will act from day to day on the situations that arise in respect to the defense program.

Mr. Purves is not new to the defense program work for, since the first of July, he has been spending approximately four days a week in Washington on it. He has been ably aided by Frederic A. Fletcher of Baltimore, who has spent almost as much time in Washington as Mr. Purves, and by Harry G. Stewart of Philadelphia. The Institute is again fortunate that these members have been willing to give so much of their time and service to this particular work. They have carefully watched the situations from day to day and their watchfulness and persuasion have produced direct results that will become more and more evident as the defense work expands. This constant daily supervision of the Washington situation will be continued and nothing that can properly be done to bring about the architects' full participation in the defense program work will be left undone.

Questionnaires

In my June message I recounted what had been done up to that time by The Institute with respect to the national defense program, explained the questionnaires sent you and their purposes, and indicated the classes into which the replies would be classified.

The questionnaires were sent to approximately 14,500 architects. To date 7814 of them have been returned, classified, and filed. This is a splendid response to the call and indicates the wide desire of the profession to serve the nation.

The classification of the replies was first made by the regional representatives of the Preparedness Committee, and their A and B classifications were reviewed at The Octagon, by direction of the Executive Committee and under the direct supervision of a member of that committee.

The architects who indicated they maintained going organizations at the moment and included *within their organizations* the personnel and facilities to render complete architectural, engineering, and similar services and had the experience and financial and other resources to render quickly and competently complete architectural and engineering services on any emergency construction work were

designated under A-Class. The number so designated was less than 3% of the number who returned their questionnaires.

The architects who indicated they had the competency but *not the complete organizations* of those included in the A-Class and gave definite information concerning their offices, personnel, facilities, and their experience and the names of the structural, mechanical, electrical, and other professional engineers and assistants who would aid them in making a complete organization were designated under B-Class. The number so designated was less than 24% of the number of those who returned their questionnaires.

The individual architects who indicated they did not have office organizations of either A-Class or B-Class nor the inclination or means to build them up were designated under C-Class. The number so designated was approximately 73% of the number of those who returned their questionnaires.

The Institute had hoped that recommendations of architects, engineers and contractors for employment might be made to the federal departments concerned by a recommending committee composed of an architect, an engineer, a contractor and a layman. On July 21, Hon. Henry L. Stimson, Secretary of War, announced he had appointed a Construction Advisory Committee of civilian experts to recommend to the Quartermaster General the architects, engineers and contractors who appeared best qualified and equipped to handle each particular construction project for the army. It is expected that this board will recommend for each project three architects or engineers, as the particular project requires, and three contractors, and from these the Quartermaster General will select the architect, engineer, and the contractor for the project who will then be cleared through the Advisory Commission to the Council of National Defense. To date the members of this advisory committee are: Francis Blossom, member of the New York engineering firm of Sanderson & Porter; Forrest S. Harvey, former assistant to the corporate chief engineer of the Baltimore and Ohio Railroad and recently associated with the Los Angeles firm of Leed, Hill, Barnard & Jowett; and F. J. C. Dresser, head of the Dresser Company, engineers and builders, at Cleveland.

Under the procedure as now set up by the committee, it would be advisable for those who submitted questionnaires, particularly of the A- and the B-Class, to now supplement them by presenting to the committee further evidence of their practices, putting the evidence in a good presentable form for filing. The evidence should comprise data concerning the organization, experience, resources, facilities, and professional qualifications of the architect, and include a general description and list of the principal buildings he has designed, with their costs and a list of the present work in his office. He should file that data with the advisory committee, together with a formal application to be allotted the defense work checked on the questionnaires, addressed as follows:

Construction Advisory Committee,
Office of the Quartermaster General,
Room 1125, Munitions Building,
Washington, D. C.

I am informed that it is not essential that architects appear in person before this advisory committee, although there is no reason why they should not do so if they so desire. Their applications with accompanying data and their returned questionnaires will be before the advisory committee, in any event.

Building Construction Work of the Defense Program

To date, construction work announced in connection with the national defense program, on which architects are qualified to serve, falls primarily within the War Department under the jurisdiction of the Construction Division of the Office of the Quartermaster General and within the Navy Department under the jurisdiction of the Bureau of Yards and Docks. Brig. General Charles D. Hartman is Chief of the Construction Division of the Quartermaster General's office, and Rear Admiral Ben Moreell is the Chief of Bureau of Yards and Docks.

Building Construction Program of the Army

The Construction Division of the War Department has for many years maintained its own designing bureaus in Washington, in which many buildings for the Army have been designed. I do not find in the Office of the Quartermaster General any disposition to enlarge this designing bureau but rather I believe it is that Office's present intention to employ architects in private practice to design the Army buildings under the defense program. The Construction Division will furnish to such architects the data necessary to ensure that the buildings they design will conform to War Department standards.

Representatives of The Institute and of the engineering societies jointly have discussed with the officers of the Construction Division the relations of the professions to the defense work and the terms of their employment. The representatives met with the utmost courtesy and a wholly professional attitude on the part of those officers.

As a result of the conferences, and speaking to the architectural profession only, it is our understanding that the Construction Division intends:

1. To distribute geographically the architectural work by employing architects resident within the locality of each project, if the Construction Division finds there are architects within that region who can furnish the necessary professional services at the required speed and efficiency.

2. To employ architects on a Cost-plus-Fixed-Fee basis. They will be selected and their contracts made by the Construction Division in Washington;

3. To require the architects to provide all design and supervision services.

4. To place each project under a representative of the Construction Division who will be resident on the job or in its vicinity. He will make all decisions relating to the architect's contract and his work, thereby making it unnecessary for the architect to look to or travel to Washington for approvals and decisions.

5. To require each architect to maintain a field office at the site of his project, which office must be under the direct personal charge of the architect, unless the job representative of the Construction Division permits the architect to place a highly qualified associate or assistant in charge of the office at the expense of the architect.

Except under special circumstances, all architectural drawings and specifications are expected to be prepared in the field office, and the Construction Division at its expense will equip that office, pay all the architect's costs of maintaining and operating it, and pay all direct costs of the architect in performing his contract services.

6. To place each project on its own merits as to the reimbursable items of costs and the amount of the Fixed Fee to be paid its architect.

Each item and the amount of the Fixed Fee will be determined for each job according to the conditions and the

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Ohio Society of Professional Engineers Adopts New Constitution

Ed. Note: — The Ohio Society of Professional Engineers Overwhelmingly Approved the Following Constitution

PREAMBLE

Recognizing that service to Society, to State, and to Profession is the premise upon which individual opportunity is builded, the Ohio Society of Professional Engineers does hereby dedicate itself to the promotion and protection of the Profession of Engineering as a social and economic influence vital to the affairs of men and the community.

ARTICLE I: NAME

The name of this organization shall be OHIO SOCIETY OF PROFESSIONAL ENGINEERS, hereinafter called the "Ohio Society".

ARTICLE II: OBJECTS

The objects of the Ohio Society are: to represent the body of Professional Engineers in all branches of the profession, with a view to promoting the public interest as affected by the services of the Engineer, and safeguarding and strengthening the professional body for this purpose; to advance the scientific, professional and economic interests of the Engineer through research, promotion of technical and scientific information, legislation, care of public relations and maintenance of the integrity of professional practice; to cultivate fraternal feeling and cooperation among the members of the profession; to secure them intelligent unity and harmony of action; and to cooperate with national, other state and local engineering societies.

ARTICLE III: MEMBERSHIP

Section 1. Membership shall consist of all members of the component chapters, all persons eligible under this Article residing in a county not included in the territory of a chapter, and Registered Professional Engineers residing and practicing in other States. There shall be five classes of members: honorary, active, surveyor, junior, and student. Only honorary and active members are entitled to vote and hold office.

Section 2. All applicants for membership shall automatically become members of the Ohio Society upon acceptance by their respective chapters. Applicants for membership from a territory not included in a chapter shall be elected by a two-thirds vote of the Board of Direction of the Ohio Society, hereinafter called the "Board".

Section 3. An honorary member shall be a person of knowledge, preeminent in engineering, surveying and/or applied science. Past presidents of the Ohio Society and its predecessors shall be honorary members. Honorary members shall be subject to neither dues nor assessments of the Ohio Society. Additions to the honorary membership shall cease on March 1, 1941.

Section 4. An active member shall be a Registered Professional Engineer, registered under the laws of this State and in good standing therein, and shall have all the rights and privileges provided for in this Constitution. An active member of this Society must also be a member of the National Society of Professional Engineers.

Section 5. A Surveyor member shall be a Surveyor registered under the laws of this state and in good standing therein, and who is not registered as a Professional Engineer.

Section 6. A junior member shall be a graduate of an accredited engineering college or of an engineering college approved by the Ohio State Board of Registration for Professional Engineers and Surveyors, or shall have had five years of experience in the actual practice of engineering and/or surveying. Each year successfully completed in an accredited engineering college as above defined shall be considered as one year of experience. A junior member may remain as such until he has become registered as a Professional Engineer or Surveyor, or has reached the age of 32 years.

Section 7. A student member shall be one who has been enrolled as a regular student of at least one year's standing in an accredited engineering college or in an engineering college approved by the Ohio State Board of Registration for Professional Engineers and Surveyors.

ARTICLE IV: CHAPTERS

Section 1. The Board may authorize and charter one chapter in any county or group of counties of the State, providied evidence is given that there is a sufficient number of Registered Professional Engineers and/or Registered Surveyors residing in the area. There must be at least ten such Engineers and/or Surveyors to form such chapter. The qualifications and grades of membership in each chapter shall be the same as for the Ohio Society, as set forth in ARTICLE III of this Constitution. All members of each chapter must also be members of the Ohio Society.

Section 2. The Board shall have authority to make rules and regulations for chartering, combining or dissolving chapters.

Section 3. Each chapter chartered by the Ohio Society shall adopt such Constitution and By-Laws for its operation as it may deem proper; provided, however, that nothing contained therein shall conflict with or contravene the Constitution and By-Laws of the Ohio Society.

Section 4. Chapters shall engage in such activities as are consistent with professional ideals and ethics, and are conducive to public welfare. Such activities shall be restricted to the county or counties for which the chapter is chartered, except as the Board may in other respects authorize.

Section 5. Authority to reprimand members, to suspend from membership temporarily and to expel from membership shall be vested in the several chapters; provided, however, that in any case of expulsion, final action shall be only after approval by the Board.

Section 6. It shall be the duty of each chapter to transmit promptly to the Ohio Society's headquarters, or to the Society's duly designated officer: the names and addresses of newly elected, expelled, sus-

pended or deceased members; and notices of all meetings and elections.

Section 7. Each chapter shall select an accredited representative and an alternate to the Board.

Section 8. In all matters of local concern, not covered by this Constitution and By-Laws, chapters shall retain full autonomy, but may call upon the Ohio Society for advice, counsel, and assistance.

ARTICLE V: OFFICERS

The officers of the Ohio Society shall be a president, two vice-presidents, a secretary, and a treasurer, who shall perform the duties usually incumbent upon such officers. The terms of office shall be from Annual Convention to Annual Convention, or until a successor is elected. Any vacancy in an elective office occurring between elections shall be filled by the Board at a meeting called for that purpose.

ARTICLE VI: NOMINATIONS

Nominations of officers shall be made by a committee of five members entitled to vote, who shall be named by the Board. Additional nominations may be made by a petition of twenty-five members entitled to vote, filed with the executive secretary at least forty-five days prior to the date of the Annual Convention.

ARTICLE VII: ELECTIONS

Election of officers shall be made annually by plurality vote on individual letter-ballots sent out thirty days prior to the date of the Annual Convention to all members entitled to vote. Ballots shall be canvassed and a return made to the Annual Convention.

ARTICLE VIII: BOARD OF DIRECTION

Section 1. The Board shall consist of the retiring president of the Ohio Society, the officers of the Society, and one regularly accredited representative from each chapter. Each representative shall be entitled to one vote for the first ten members and to an additional vote for each additional twenty-five active and/or honorary members,—or major fraction thereof,—of his chapter. Votes shall be adjusted as of January first and July first of each year. Directors other than representatives shall be entitled each to one vote.

Section 2. The Board shall meet at the call of the president, or as requested by six directors. One-third of the total number of the members of the Board shall constitute a quorum. If a quorum is lacking at any meeting, the Board may be canvassed by letter-ballot of which a majority of the votes cast shall prevail.

Section 3. The Board shall transact the general business of the Society, fix dues and assessments, and determine questions of policy. The Board may employ an executive secretary and such other assistants as it shall deem necessary, who shall serve at its pleasure. The executive secretary and the treasurer shall furnish such bond as the Board shall determine, the cost of such bonds to be paid by the Society.

Section 4. The Board shall have authority to establish and amend its By-Laws by a two-thirds vote at a meeting called for that purpose.

Adopted September 1, 1940

ARTICLE IX: CONVENTIONS

Annual conventions will be held at the time and place determined by the Board.

ARTICLE X: FUNCTIONAL GROUPS

Upon written petition of a reasonable percentage of active members having common professional problems and interests, the Board may grant permission to such functional groups to organize and operate under the Constitution and By-Laws of the Ohio Society. The chairmen of functional groups shall be non-voting members of the Board.

ARTICLE XI: CITATIONS

Citations may be made each calendar year for outstanding engineering contribution to the public welfare, or for outstanding service in the interest of the professional welfare of the Engineer. Not more than two citations can be made in any year. The citation shall consist of a certificate suitably engrossed. Those to be honored by citations shall be selected by a committee consisting of the three, living, immediate preceding past presidents after their careful study of all nominations submitted. Selections of the committee shall be reviewed, and must be approved by the Board before candidates are eligible for citation. The citation or citations shall be presented at the Annual Convention following the year for which the selection has been made.

ARTICLE XII: AMENDMENTS

Amendments may be initiated by the Board or by any chapter. They must be submitted in writing to the executive secretary. Amendments and letter-ballots shall be sent to all members entitled to vote at least two weeks prior to the date set for closing of the balloting. Amendments to become effective must receive a favorable vote of two-thirds of the votes cast, and shall become effective immediately thereupon.

ARTICLE XIII: EFFECTIVE DATE

This Constitution shall become effective January 1, 1941, and shall repeal and replace all former Constitutions of the Society.

BY-LAWS

ARTICLE I: DUES

Section 1. Annual dues of active members shall be $8.00, of which $4.00 are for the Ohio Society and $4.00 for the National Society. Dues shall include a subscription to "The American Engineer".

Section 2. Annual dues of surveyor members shall be $4.00 for the Ohio Society, $1.00 of which is for a subscription to "The American Engineer".

Section 3. Annual dues of junior members shall be $3.00 for the Ohio Society, $1.00 of which is for subscription to "The American Engineer".

Section 4. Annual dues of student members shall be $1.00 for the Ohio Society, for which they shall receive a subscription to "The American Engineer."

Section 5. Chapter dues shall be as determined by the chapter and shall be in addition to the Ohio Society and National Society dues.

Section 6. Chapters shall collect from their respective members all dues and assessments, local, State and National, and shall forward all State and National dues and assessments to the executive secretary of the Ohio Society at least once a month.

Section 7. The fiscal year shall be the calendar year.

ARTICLE II: COMMITTEES

Standing committees of the Ohio Society shall be: executive, legislative, professional practices, public relations, membership, and chapter-relations. The Executive Committee shall consist of the president, two vice-presidents, secretary, treasurer, and immediate preceding past president. All other committees shall be appointed by the President, and shall perform such duties as may be assigned by him.

ARTICLE III: PARLIAMENTARY AUTHORITY

Robert's Parliamentary Rules of Order shall be the standard authority of the Society.

NATIONAL SOCIETY NEWS

The Board of Directors of the National Society of Professional Engineers met September 14th in Washington to take action on numerous issues of importance to the National Society.

It will give satisfaction to the membership to know that we are living within our budget. Among the other interesting points of progress reported at the board meeting were the following:

REPORT OF EDUCATIONAL COMMITTEE

Chairman Hale Sutherland of the Educational Committee presented a report in three parts.

1. Verbal suggestion that plan for providing local chapters with speakers be developed.
2. Verbal suggestion that consideration be given to work of S.P.E.E. as educational outlet.
3. A written outline of certain lines of thought.

Moved by Director A. E. Roche that Committee develop suggestions advanced and that steps be taken to follow-up outline presented in written portion of report. Seconded by Director J. H. Morgan. Carried.

Director J. H. Morgan and Secretary Edward Larson reported progress for the Convention Committee. Dates of Convention set for January 30, 31 and February 1, 1941 at Hotel Sherman, Chicago, Illinois.

Treasurer W. L. Simpson, reported progress in matter of reorganization of U. S. Housing Authority.

Past President Sheridan reported progress by the National Engineering Societies Conference on Compensation.

A Nominating Committee of five was appointed as follows: Director G. F. Randolph, chairman, Director R. B. Allen, Director H. J. Darcey, Director J. H. Morgan and Past President P. T. Ford.

Moved by Director G. F. Randolph that election results be broadcast in Pre-Convention issue of the AMERICAN ENGINEER. Seconded by Director J. H. Morgan. Carried.

Consideration was given to definition of "Good Standing." Moved by Vice-President S. I. Sacks, seconded by Treasurer W. L. Simpson that since dues are due and payable on January of each year a member shall be considered to be in good standing if dues are remitted prior to close of December 31 of said year, failing to so remit the member shall become delinquent and if remittance is not made within 18 months from due date such member shall be dropped from the membership rolls. Carried.

Moved by Treasurer W. L. Simpson, seconded by Director R. B. Allen that a member shall receive the AMERICAN ENGINEER only while in good standing and that reinstatement to membership shall require the payment of current dues plus one year's dues in arrears. Carried.

Consideration was given to "Voting Representation" as noted in Constitution. It was agreed by the Board of Directors that this would be limited to membership in National Society only.

Annual Convention

National Society of Professional Engineers

CHICAGO, ILLINOIS

HOTEL SHERMAN

1941

JAN. 30-31 - FEB. 1

How One Society Looks After The Interests of Its Members

An object of the Illinois Society of Engineers Incorporated is the protection of the welfare of its members. Always alert to the accomplishment of this object the Board of Direction has taken notice of an undesirable encroachment upon the rights and liberties of some of its members; particularly those of its members in the employe of certain branches of the state government. The action follows closely along the lines followed recently by the Champaign County Chapter in protecting its members from political levies; by the Capital Chapter in securing the appointment of a professional engineer to public office in Springfield; and by the Rock River Chapter in securing the appointment of a professional engineer rather than a layman in a bridge department.

A strong resolution has been adopted by the Board of Direction condemning the practice of levying political assessments on technical employees and the forcing of repugnant political duties upon them. The resolution, worded in vigorous and emphatic language, is as follows:

WHEREAS it has come to the attention of the Illinois Society of Engineers that the Administration of the State of Illinois, through its Department of Public Works and Buildings, is requiring engineering employees (as well as others) of the Department to contribute two per cent of their salaries to a political campaign fund, and sign cards pledging such payments, and

WHEREAS, although these pledge cards read: "I voluntarily agree to donate . . . ," never the less the word "required" above is used advisably since those engineering employees were given to understand verbally, but more or less directly and definitely, that it would be to their interests to sign such pledges and make such payments, and

WHEREAS the said Department is further requiring some of its engineering employees (against their will) to act as collectors of these payments from other employees, and

WHEREAS the said Department through its professional engineering personnel, supervises the expenditures of Motor Vehicle Taxes and allotments made to the State of Illinois by the United States Government, and

WHEREAS the continuance of the practice of forced political contributions will encourage the selection of the personnel of said Department on the basis of loyalty to a political party rather than on the basis of professional engineering attainments, to the detriment of the general welfare of professional engineers of this State

NOW, THEREFORE, BE IT RESOLVED by the Board of Direction of the Illinois Society of Engineers that it go on record as believing that this practice, however camouflaged, is an outright assessment for political purposes against the salaries of these engineers, and that the presentation of such pledge cards to these employees by an authorized representative of their superior officers is an implied threat against the security and positions of the employees, and

BE IT RESOLVED, that this Board believes that these salaries are paid from tax funds collected from all the people of the State and are not paid by any political party; that the services of these engineers have been in the past and should continue to be entirely nonpolitical in nature, but on the contrary have been and should be strictly professional and technical, having in mind the best interests of all the people of the State regardless of party, and

BE IT RESOLVED, that this Board shall go on record as opposed to the solicitation of campaign funds by any political party or organization, from technical and professional engineers employed by the State of Illinois, not only as contrary to the ethics and injurious to the standing of the engineering profession; but also that it is contrary to the best interests of the people of the State of Illinois due to the inevitable lowering of the morale of its employees, and their fear of reprisals, if unwilling to sign; and furthermore that it is contrary to American principles of independence in political matters, and

BE IT RESOLVED by the Board of Direction that the solicitation of campaign funds from professional engineering employees of the Department of Public Works and Buildings by or under the direction of the officials and employees of the State of Illinois be abated by all the proper means that are at the disposal of the Society and its individual members and that the Illinois Engineering Council and other professional engineering Societies within the State of Illinois be invited to participate, and

BE IT RESOLVED that the United States Attorney General Jackson be furnished with a copy of this resolution with the request that he proceed without delay to investigate this violation of the Hatch Act and that supporting statements in the possession of the Society be placed at his disposal, and

BE IT RESOLVED that the members of the Society be kept informed concerning the manner in which the office of the Attorney General of the United States prosecutes its investigation of these affairs, and

BE IT FURTHER RESOLVED that this Resolution be published and made available to the members of the Society in the October issue of the *Illinois Engineer* and that full publicity be given the action of this Society through its Board of Directors and that copies be furnished the Governor who, as Chief Executive of this State is responsible for the nomination of the Director of Public Works and Buildings and the Chief Engineer thereof and that upon this Board being informed that the practice of forced political contributions herein outlined has been abolished, the sums contributed by professional engineers having been returned and proper measures taken to prevent the recurrence of such a practice within said Department, the members of this Society shall be promptly informed.

(From the Illinois Engineer)

Cleveland Follows Through

The Cleveland Society of Professional Engineers is voting upon the issue of changing its constitution to conform to the recently adopted constitution of the Ohio Society of Professional Engineers.

The proposed Constitution was prepared by a special committee comprised of William C. Kammerer, Chairman, John J. Lucas, Secretary, George E. Barnes, Sol A. Bauer, Harvey R. Hawgood, Walter L. Leach, John O. McWilliams, Frank C. Tolles, Fred H. Vose, and William D. Young. Where possible, the present Constitution has been followed, and the changes are, in general, mandatory and were taken from the recently adopted Constitution of the Ohio Society of Professional Engineers, for Chapters affiliating with the State and National Societies.

Ballots will be mailed to the membership early in November, and will be canvassed on November 25, 1940.

MISSOURI

Joint Convention of Architects and Engineers

The Missouri Engineers and Architects held a joint convention October 3, 4 and 5, 1940 at the Hotel Muehlebach, Kansas City, Mo., for the purpose of working out an organization and perfecting the proper procedure for the successful passage of a Registration Law for Architects and Engineers.

Officers of the Missouri Society of Professional Engineers elected at this meeting were as follows:

President—E. B. Black
First Vice-President—A. H. Baum
Second Vice-President—C. P. Owens
Third Vice-President—O. J. Lamb
Secretary-Treasurer—Harold J. Bruegging
Director—Frank Beard
Director—Charles M. Crews

The convention committee included the following:

C. G. Roush, *Chairman* .....Kansas City
W. R. Ackerman .....St. Joseph
Leo F. Beckett .....Sikeston
F. F. McKinnon .....Jefferson City
L. B. Mitchel .....Joplin
C. W. S. Sammelman .....St. Louis
M. H. Small .....Kansas City
N. F. Tamm .....Macon

The program follows:

FRIDAY, OCTOBER 4

MORNING SESSION

9:00 A.M.—
REGISTRATION .....*Mezzanine Floor*
9:30 A.M.—
MEETING CALLED TO ORDER
W. M. Spann, President Local Chapter, Kansas City, Mo.
ANNOUNCEMENTS
ADDRESS OF WELCOME
John B. Gage, Mayor, Kansas City, Mo.
RESPONSE
R. P. Cummins, President State Chapter, Jefferson City, Mo.
NATIONAL DEFENSE IN THE MID-WEST
Lou Holland, President Mid-Central War Resources Board, Kansas City, Mo.
THE NEW BUILDING CODE FOR KANSAS CITY
Arthur S. Keene, Kansas City, Architect, Chairman Code Committee
CITY MANAGEMENT AND ENGINEERING
L. P. Cookingham, President International City Managers Association, Kansas City, Mo.
UNDERGROUND CHICAGO (Illustrated)
L. D. Gayton, City Engineer, Chicago, Ill.
12:10 P.M.—
INFORMAL LUNCHEON ...Hotel Continental
Engineers and Their Ladies
ILLUSTRATED TALK—"Foulk's Law as a Means of Predicting Post Curricular Achievements."
Prof. Jack J. Hinman, Jr., Iowa City, Iowa

AFTERNOON SESSION

1:45 P.M.—
PROFESSIONAL SESSION
REGISTRATION LAW
C. C. Knipmeyer, Prof. of Electrical Engineering, Rose Polytechnical Institute, Terre Haute, Ind.
COMPARISON OF AMERICAN AND EUROPEAN PRACTICES IN REINFORCED CONCRETE
A. J. Boase, Manager Structural Bureau, Portland Cement Assn., Chicago, Ill.
AIRPORTS
T. C. Flaherty, Regional Engineer, CAA, Kansas City, Mo.
7:00 P.M.—
BANQUET .....Ball Room, Muehlebach Hotel
R. P. Cummins, *Toastmaster*
"Tried, but Found Wanting" .....Tom Collins
Kansas City, Mo.
Review .....Coleman-McLaughlin
Hazel Randall, *Mistress of Ceremonies*

SATURDAY, OCTOBER 5

BUSINESS SESSION

9:30 A.M. —
REPORT OF COMMITTEES
Ethics and Practice .....Dr. W. A. Chedsey
Aims and Activities .....E. W. Carlton
Rules .....O. J. Lamb
Public Relations .....Dean A. S. Langsdorf
Membership .....J. B. Butler
Resolutions .....E. C. L. Wagner
Legislation and Enforcement .....L. A. Pettus
Chapter Activities .....H. C. Williams

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of AMERICAN ENGINEER, published bi-monthly at Harrisburg, Pennsylvania for year ending October 1, 1940.

District of Columbia, } ss.
City of Washington }

Before me, a Notary Public in and for the District aforesaid, personally appeared Edward Larson, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AMERICAN ENGINEER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, National Society of Prof. Engineers, Washington, D. C.; Editor, Robert Hall Craig, Harrisburg, Pa.; Business Manager, Edward Larson, Washington, D. C.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) National Society of Professional Engineers. A South Carolina corporation not for profit.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is.....(This information is required from daily publications only.)

EDWARD LARSON,
Business Manager.

Sworn to and subscribed before me this 1st day of October, 1940.
(SEAL)
(My commission expires October 1, 1942.)

MARY P. STONE.

The Indiana Professional Engineer

Registration Board To Ask For Funds

The members of the Society will be interested to learn that the Indiana State Board of Registration for Professional Engineers and Land Surveyors, in making up the budget request for operating expenses of the Board for the next bi-ennial period, have included an additional fund to be used for the purpose of employing an investigator in connection with registration and the enforcement of the provisions of the Registration Act.

During the past five years registration in this State has increased approximately one hundred percent; however, there is still a rather large number of engineers practicing without having complied with the provisions of the Registration Act. This is especially true in the industrial field of engineering and to some extent in various other positions. It appears from personal contact that this condition exists from a lack of knowledge of the law rather than a disposition to evade its provisions.

The Registration Act provides that all funds collected by the Board shall be paid into the State Treasury and placed in a special fund known as the "professional engineer's fund" and specifically appropriated for the use of the Board. However, each session of the State Legislature passes an appropriation Act which supersedes the provisions of the Registration Act and limits the Board to the funds appropriated by the Legislature regardless of the amount collected. During past years the appropriation was just barely sufficient to pay the regular operating expenses of the Board without any funds being available for enforcement or investigation in connection with complaints filed with the Board.

Each year the funds collected from registration and renewal fees is much in excess of the expenses of the Board and this excess fund, which was $5,300.00 at the close of the past fiscal year, reverts to the General Fund of the State.

The duties of the proposed state investigator, who shall be a registered professional engineer with suitable qualifications for the position, will be to make a complete canvass of the engineering profession of the State and report the names, position, and duties of all engineers who are practicing without registration, also investigate and report any apparent violations of the provisions of the Registration Law.

This canvass will be made more particularly for the purpose of educating and acquainting the non-registered engineer with the requirements of the Registration Law and the benefits of registration rather than to use the "iron hand" of enforcement without giving the engineer an opportunity to qualify by registration for the practice of engineering.

The Board is of the opinion that a program of this character would materially aid in placing the engineering profession of this State on a plane where it belongs and equal to that of other outstanding professions. This is concurred in by a resolution of the Society passed at a recent State Convention in which the Board was requested to apply for an appropriation for the purpose of defraying the expenses of such a program.

The Legislative Budget Committee is rather skeptical of requests for additional appropriations and, while the Board has been assured of the assistance and cooperation of the Society in having the next State Legislature approve the appropriation for this program, it hopes for and invites the assistance of all registered engineers who are interested in the promotion of the welfare of the engineering profession.—Lewis T. Gootee

New Chapters

Chairman Joe Wysong of the Chapter Activities Committee has reported that Engineers V. M. Ralston, who has recently moved to Evansville; Louis Geupel, of Evansville, Glenn Allen, of Vincennes, and others are working very enthusiastically to form a chapter in the southwest part of the state. A meeting will be called of the engineers in that vicinity soon to appoint temporary officers and committees to work out the details of a constitution and a charter. It is hoped that the charter will be petitioned for at the Fort Wayne convention.

On September 25 the embryo Lafayette Chapter held its second meeting at the City Hall in Lafayette. As Acting Chairman Buerkle opened the meeting there were fourteen engineers present. It was decided that the Lafayette Chapter will embrace the fourteen following counties: Tippecanoe, Pulaski, White, Warren, Montgomery, Newton, Fulton, Cass, Clinton, Boone, Jasper, Benton, Carroll and Fountain.

Chairman Buerkle appointed two committees: a committee on constitution and a committee on nominations. The Constitution Committee is composed of Engineers Overesch, Petty and Springer as Chairman. The Nominating Committee is Engineers Moss, Porter and Caldwell as Chairman. It is a certainty that this chapter will ask for its charter at the Fort Wayne convention.

Legislative Committee

Chairman Clyde Walb of the Legislative Committee has activities humming in preparation for a beneficial program to the coming Legislature.

The bills for presentation are now being drafted. It is hard to say in what final form the bills will appear because of the writing and rewriting to be sure of eliminating all loopholes that might cause the bills to be scrapped. Nevertheless, whatever the final forms will be, the bills will ask for compulsory attendance of city engineers at the Purdue Road School and city engineers to be registered; all county engineers to be registered; some sort of employment security for highway engineers and corrections to the registration law, particularly the diversion of the registration board's fund into the general fund.

On October 1 Engineer Walb and some of his committee met with a group of engineers at the Plaza Hotel in New Castle at a dinner meeting. One of the guests was State Senator Walter Chambers of New Castle. After the dinner the legislative program was explained and discussed. Senator Chambers was a very attentive listener and offered many constructive suggestions as to how to proceed in the presentation of other bills.

What the Society needs is more Senators and Representatives like Senator Chambers, who is in favor of engineering legislation. It is the duty of every member who knows a member of the Legislature to contact him and explain that we are working on a program to present to the General Assembly for their consideration and enactment.

A meeting, similar to the New Castle meeting, is being tentatively scheduled at Rensselaer for the evening of October 18. All engineers in that vicinity are urged to contact Engineer Nesbitt, of Rensselaer, as to the exact date and place of the meeting, and urged to attend.

If any engineers would like to hold similar meetings in their localities write Engineer Walb or any officer of the Society, they will have full cooperation.

Annual Meeting

At a recent meeting of the joint IEC and ISPE annual convention committee enough plans were completed to assure a very enjoyable and successful convention, to be held in Fort Wayne at the Anthony Hotel on Friday and Saturday, November 15 and 16.

NEW YORK

P. E. Examinations in New York State

A total of 200 candidates took the June examinations for Professional Engineers' license in New York State. Of this total, 117 (or 59 percent) passed, 52 were conditioned in one subject, and 31 failed in more than one subject and will be required to take the complete examinations again.

The results in the separate examination papers were as follows:

Part I—Structural Planning and Design 75% passed
Part II—Basic Engineering Sciences ...63% passed
Part III—Professional Engineering .....78% passed

These results reflect the influence of recent modifications in the examination procedure and content, namely increased emphasis on questions on Planning in Part I, increased range of selection of questions in Part II, and increase of time allowance from three hours to four hours for each of the three papers.

N.Y.U. College of Engineering to Offer First Course in Research Laboratory Management

In recognition of the rapid development of industrial research, combined with its growing importance in the national defense program, the New York University College of Engineering will offer the first course in the country in research laboratory management, it was announced by Dean Thorndike Saville.

The outline of the course has been planned in cooperation with an advisory committee of industrial research executives headed by Maurice Holland, director, Division of Engineering and Industrial Research, National Research Council who suggested the course; Dr. W. A. Gibbons, director of development, United States Rubber Company; H. W. Graham, director of metallurgy and research, Jones and Laughlin Steel Corporation; Lewis N. Waters, vice-president, General Foods Corporation; Dr. Franklin Cooper, Haskins Laboratories, and Robert B. Colgate, vice-president, Colgate-Palmolive-Peet Company.

"It is estimated that there has been a 100% increase in the number of research laboratories established since 1927, with relative increases in personnel and expenditures," Dean Saville said. "These facts have caused problems of management, administration, and accounting in a branch of industry which heretofore have been comparatively free of budgetary restrictions, operating policies, and administrative organization.

"This tremendous growth has demanded of industry that it seek men trained in administration, accounting, organization, and management who have considered the problems peculiar to this new industry in the light of its unusual functions.

"In addition, the national government has come to realize the importance of industrial research in any war, either armed or economic, against any foreign power or against economic distress. It will certainly be one of the country's first lines of defense," the Dean said.

The course will begin in February and will be offered in the department of administrative engineering under the direction of Dr. L. P. Alford, chairman of the department, and the advisory committee. The course will consist of sixteen evening lectures given by members of the college faculty and executives from industry and the National Research Council.

New York State Society of Professional Engineers

The Fall Meeting of the New York State Society of Professional Engineers was held in Jamestown, New York, October 18, and October 19, 1940, at the Hotel Jamestown.

The program followed the usual plan, a Board of Directors meeting at 8 o'clock on Friday evening, a general membership meeting at 10 A. M. on Saturday, and a Luncheon Meeting of the membership and guests at 1 P. M.

Engineer Charles Upham of the American Road Builders Association addressed the Luncheon meeting on "National Defense and Highway Economics." Another speaker was Engineer Virgil M. Palmer, past chairman of the New York State Board of Examiners for Professional Engineers whose subject was "The Licensing of Professional Engineers."

Special Train Transportation arrangements were made via New York Central Railroad.

Albany Chapter Meets

The Albany County Chapter of the New York State Society of Professional Engineers opened its season with a dinner meeting at the Aurania Club, in Albany, October 15th.

The Guest Speaker was Lieutenant Colonel C. W. Ball, Corps of Engineers, in command of the Army engineers of the New York District who spoke on National Defense and what the Engineers can do about it. Leonard F. Mayer was chairman of the committee in charge.

Brooklyn

President, Engineer Herman F. Ford, and your new Chairman of the Meetings and Papers Committee, Engineer David Standley, urge your continued support and more frequent attendance.

"Pollution Abatement Around New York" by
Engineer Seth G. Hess, Chief Engineer-Executive Secretary
Interstate Sanitation Commission

The need to do something to abate the pollution of the New York waters has been recognized for some time by competent authorities. A great step towards organized action in this direction was the establishment of the Interstate Sanitation Commission by the States of New York and New Jersey to control New York Harbor.

The ultimate aim of the Commission is to have established proper methods for the treatment of sewage wastes dumped into the waters under its jurisdiction. In order to carry through such a comprehensive program, the Interstate Sanitation Commission required an enormous amount of specialized information on water pollution within the area of its jurisdiction, and in this connection a New York City WPA project was sponsored in April 1939 to collect the necessary data. The WPA project on water pollution has thus contributed towards making our Metropolitan waters clean and free from infection.

The following, among others, took part in the discussion:

Dr. Rolf Eliassen, newly appointed head of the Department of Sanitary Engineering at New York University; Engineer Arthur J. Griffin, Chief Engineer of Brooklyn's Highways and Sewers; Professor John Charles Riedel, Chief Engineer of the Board of Estimate and Planning Commissioner of the City of New York; Engineer Arthur V. Sheridan, Planning Commissioner of the City of New York; Stanley J. Skarvan, former chemical consultant for Meigs, Bassett and Slaughter; Engineer Walter P. Warendorff, vice-president of the Queens County Society of Professional Engineers; Engineer Chester G. Wigley, former chief engineer of the New Jersey State Department of

Pennsylvania Society Holds 1940 Fall Meeting at Hershey

The program:

FRIDAY, SEPTEMBER, 13

1.00 to 6:00 P. M. .....Registration
2:00 to 5:00 P. M. .....Committee Meetings
Executive .....Engr. William S. Lohr, *Chairman*
Ethics and Practice ...Engr. Hubert C. Eicher, *Chairman*
Legislative .....Engr. Samuel I. Sacks, *Chairman*
Public Relations .....Engr. J. J. Paine, *Chairman*
Membership .....Engr. Earl Dwight Covell, *Chairman*
Chapter .....Engr. Lynn Perry, *Chairman*
Publications .....Engr. William N. Smith, *Chairman*
Nominating .....Engr. J. J. Paine, *Chairman*
Auditing .....Engr. Henry F. Bamberger, *Chairman*
Architects and Engineers Engr. Joseph Stastney, *Chairman*
Joint Contractors and
Job Mobilization .....Engr. Robert Hall Craig, *Chairman*
Constitution Revision ..Engr. Hubert C. Eicher, *Chairman*
Headquarters .....Engr. John M. Moltz, *Chairman*
6:30 P. M.—INFORMAL DINNER
Toastmaster ..Engr. Dr. Hubert C. Eicher, *State Director*
Address of Welcome .....Engr. John M. Moltz
Pres. Hbg. Chapter
Speakers .....M. Edwin Green, R.A.
Secty. Pa. State Board of Examiners of Architects
Subject:—COOPERATION AND COLLABORATION BETWEEN ARCHITECTS AND ENGINEERS
Engineer Edward Larson .....*Executive Secretary*
National Society of Professional Engineers
Subject:—"OUR NATIONAL SOCIETY"
8:30 P. M. .....Executive Board Meeting
President, Wm. S. Lohr, *Presiding*

SATURDAY, SEPTEMBER 14

8:30 to 10:00 A. M. .....Registration
9:30 to 12:00 (Noon) .....Business Meeting
Pres. Wm. S. Lohr, *Presiding*
STATE CHAPTER REPORTS
STATE OFFICERS REPORTS
STATE COMMITTEE REPORTS
GENERAL DISCUSSION
12:30 P. M. ..Luncheon, Dining Room Community Bldg.
Toastmaster .....Engr. Wm. S. Lohr, *Pres.*
Introduction of Guest and Short Remarks
Speakers .....Engr. Frederick H. Zurmuhlen, *Pres.*
New York State Society of Professional Engineers, Inc.
Harry E. Nold
President Ohio Society of Professional Engineers
Henry Y. Shaub, Reg. Architect
President Pennsylvania Association of Architects

PENNSYLVANIA SOCIETY OFFICERS

Wm. S. Lohr, *President*
E. A. Holbrook, *First Vice President*
Jas. A. Powell, *Second Vice President*
T. W. Battin, *Executive Secretary, Emeritus*
R. S. Conrad, *Acting Secretary*
Walter E. Witte, *Financial Secretary*
A. A. Townsend, *Treasurer*

CONVENTION COMMITTEE

D. Paul Witmer
H. N. Herr
A. Bowman Snavely
George A. Rahn
Victor J. Snyder
Irvin H. Geiger, *Chairman*

New Jersey
Monmouth-Ocean Society Meets

The Monmouth-Ocean Professional Engineers Society held its first fall meeting in Asbury Park, N. J., on October 2, 1940. Claude Birdsall of Belmar presided in the absence of the President, L. E. Dequine of Long Branch, who was on vacation and Bruce Larrabee of Lakewood, the Vice-President, who was on his honeymoon.

Mr. D. C. Middleton and Mr. Stoueffer, representatives of Giles and Ransome of Philadelphia gave an illustrated lecture on earth-moving equipment from all corners of the globe and on airport development.

Mr. Leo McKee of Red Bank, the Secretary-Treasurer, announced that he has a few openings listed for competent engineers. Further information concerning these positions may be had by contacting him.

The next meeting was planned for November 6th at Sunset Cabin, Lakewood, New Jersey.

C. F. REPLINGER,
Publicity Chairman

Committee to Consider Engineering Ethics

Preparation of a "Code of Ethics" for the engineering profession to form the basis for actions by member societies of American Engineering Council in adapting it to their specific requirements has been entrusted by President Alonzo J. Hammond to a newly-formed committee headed by Dugald C. Jackson, professor emeritus, Massachusetts Institute of Technology, who will represent the American Institute of Electrical Engineers and the American Institute of Consulting Engineers. Other members are: Dr. William H. Kenerson, chairman division of engineering, Brown University, representing the American Society of Mechanical Engineers; Arthur W. Dean, chief engineer (retired), Massachusetts State Planning Board for the American Society of Civil Engineers; Dean J. W. Barker, Columbia University (Society for the Promotion of Engineering Education). Dr. Scott Turner will also participate as an observer, representing the American Institute of Mining and Metallurgical Engineers.

(From "Milwaukee Engineering")

Indiana Honors Engineer

Too seldom do engineers get recognition for their meritorious work. An exception is found in the roadside park, on State Route 62, overlooking the Ohio River, just east of Leavenworth, Indiana. The bronze marker, in this park, reads: "George M. Fritz, Locating Engineer, State Highway Commission of Indiana, 1920-1923. Born Jan., 1867, Died 1923.—Through Summer's Heat and Winter's Blast, He Trod These Hills That We Might Pass.—Erected by the *Indiana Society of Professional Engineers.*"

(From the Highway Magazine)

Architects—National Defense

(From page 9)

circumstances. The Construction Division has set up a schedule of Fixed Fees which it will use as a guide in determining proper and justifiable remuneration for the architects, and the reimbursable items will cover the usual items of direct costs in architectural practices, corresponding in general to those set out in The Institute's Manual of Accounting.

Considering the circumstance they reflect and the assumptions on which they were based, the schedule of Fixed Fees, the list of reimbursable items, and the form of contract developed as a result of the conferences by the Construction Division to serve for the architectural and engineering professions seem fair to both the public and the professions.

The essence of each construction project is to be the speed with which it can be completed. The unusually short periods within which the architects and engineers will be required to complete their services and the fact that payments to them will be on a fortnightly basis, making it unnecessary for them to provide large cash outlays, were important factors in the determination of the Division's Fixed Fee Schedules.

A common schedule of Fixed Fees, list of reimbursable items, and form of agreement will be used for both architectural and engineering services. The architect and the engineer must join in a common contract if both architectural and engineering services are required on a project. The projects will be awarded in as large units as practicable and it is the intention to have not more than one professional service contract nor more than one construction contract on any project. It is *not* the intention that architects and engineers shall be employees of the contractor, and it is the intention to engage design services and contracting services *under separate contracts.* In some instances, a contract has been made with contracting organizations who have maintained designing and construction facilities and other such contracts may be given out. But we are informed they will be the exception.

We have also been given to understand that it will be the policy of the Division to distribute awards as widely as possible and not to employ the same architect, engineer or contractor on two or more projects.

Building Construction Program of the Navy

The representatives of The Institute and the engineering societies also have been in consultation with the Bureau of Yards and Docks. That Bureau has not maintained as large an architectural drafting force as the Construction Division, and there is no evidence of any intention of the Bureau to enlarge its building design facilities. The Bureau has been employing architects in private practice to design its building construction work and it is our best understanding that will continue to be its policy.

The Bureau has been employing architects on a percentage basis as a general rule, but it is my impression that its future contracts will be on a Cost-plus-Fixed-Fee basis, and it is our hope that the form of contract developed with the Construction Division of the Army will be the basis of the contracts with the Navy. I believe the Bureau has heretofore awarded general construction contracts which included design services, although we are aware of no cases in which that has been done under the defense program. We believe its policy will be to award separate contracts for professional and for construction services.

No board has been set up by the Navy Department corresponding to the advisory board of the War Department, to recommend architects, engineers and contractors for employment by the Bureau. The Bureau has before it lists of the classified questionnaires returned by the architects to The Institute, but there is no reason why architects should not file their formal applications and supporting data with the Bureau, in the manner recommended for filing with the Construction Division of the Quartermaster General.

Housing Work Under the Defense Program

I have stated that the housing work may comprise the greatest field in which architects may serve in the defense program. The housing projects will be for various purposes; principally to provide quarters for enlisted and for conscripted personnel, for officers and their families, for those engaged in the defense industrial program and their families, and for administration, hospital, mess, and other incidental purposes.

The quarters for Army and Navy enlisted men and officers and personnel with the incidental buildings may be designed by the War and the Navy Departments, but it seems likely that the civilian housing will be placed under the jurisdiction of one or more of the other existing federal agencies having to do with building construction.

The defense housing program is more or less nebulous and in the making. Mr. Charles F. Palmer, chairman of the Housing Authority of Atlanta, Georgia, has been named very recently as Coordinator of Housing. His duties will involve primarily, the expedition of housing developments which may be undertaken by the federal authorities in connection with defense activities, particularly with respect to industrial plants. Mr. Jacob Crane, former Deputy Commissioner of United States Housing Authority, has been made assistant to Mr. Palmer, and undoubtedly it is intended that the organization they set up will have an important part in the development of the defense housing program. There is no present indication, however, that the selection of architects, engineers, or contractors for the housing work will pass through their hands, nor is it clear yet how the federal departments to which housing work is assigned will function with respect to the coordinator.

The Institute's representatives in Washington are keeping in close touch with developments in this important field of service for the architect.

Lists of Projects

It is *not* possible to secure from any of the departments in Washington, or from any central agency, lists of projects of any type under the defense program for which future contracts for architectural services are to be let. This is for reasons of public policy, and because appropriations, defense coordination, and requirements of an administrative nature are involved.

It *is* possible to secure lists of contracts awarded for architectural services, construction work, or general production, grouped by state. Such state lists are available through the departments having jurisdiction of the projects, or through the Office of Government Reports.

Members who desire information concerning particular projects, or groups of projects in their states for which contracts have been awarded may address letters requesting that information to The Institute at *The Octagon.* Responses will be made direct, if practicable, otherwise the letters will be referred for answer to the federal departments having jurisdiction.

Your Officers will be glad to receive from any of you suggestions of what can be done by them to forward the employment of architectural services under the defense program, and if it seems feasible such suggestions will be carried out.

Cooperation—Arch—Eng

(From page 6)

but the general good of the profession should be paramount.

Engineers Performing Architectural Service

There has been considerable discussion in the two professions as to the extent to which the engineers may perform architectural work and the extent to which architects may perform engineering work.

There is a clause in the Engineers Act which reads as follows:

"Nothing in this Act shall be construed to apply to any person who is qualified under the Law to use the title 'Registered Professional Engineer' but such person may do such architectural work as is incidental to his engineering work; nor shall this Act prevent any person who is qualified under the law to use the title 'Registered Architect' from doing such engineering work as is incidental to his architectural work."

There is an identical clause in the Architects Act, except that the terms "Enginer" and "Architect" are interposed.

You will note that there is nothing in the Architects Act which gives the architect any right to do any engineering except that which is incidental to his profession.

You will also note that, in the Engineers Act, there is nothing that gives the engineer any right to do architectural work except that which is incidental to his work.

It has been assumed by some members of the engineering profession that an Engineer was licensed to perform architectural work even though this assumption was not endorsed by the more prominent members of the engineering profession or by the Board of Examiners.

In correlation, the architects felt they were competent to perform any and all engineering service for which they could obtain a commission; from spotting a few electric outlets in a small residence to delving into intricacies of a complicated sewage disposal plant.

Present Tendency

This feeling still persists in both professions but the pendulum is swinging away from this viewpoint and there is a real appreciation developing for the skills of each other's profession.

My Experience

When I first started to practice architecture, and that was not so many years ago, the necessity of professional engineering service was rarely, if ever, considered.

Structural and mechanical engineering services were available for the asking.

Architects' fees were limited.

We could not afford what we then thought of as the luxury of professional engineering services.

This situation is changing. The client now shows a faint glimmer of comprehension when you suggest the necessity of engineering services in connection with a building project.

Manufacturers' engineering service is, of course, still valuable and necessary, but it is not necessary to the extent of taking the place of the professional engineer.

Housecleaning Our Own Profession

It seems to me that both professions might clean house and police their own group.

Would it not be better for the engineers if they tell one of their own group that, according to the evidence at hand, he is not qualified to do structural engineering work when he has been granted a registration on the basis of his work in sanitary engineering?

Or, wouldn't it be better for the architects to tell a fellow practitioner that the work he is doing is primarily engineering and that, under his license as a Registered Architect, he has not the right to perform this service?

Joint Consultation by Boards

The Joint Boards have adopted a policy whereby they will hold joint consultations and be in agreement before they request a practicing engineer to desist from performing architectural work or before they request a registered architect to desist from performing engineering work.

I might say, however, that from my observations, any architect, who is performing services for which he is not qualified, should not expect any sympathy from the State Board of Examiners of Architects, nor will any engineer who is performing architectural work, for which he is not qualified or licensed, find any sympathy from the State Board of Registration of Engineers.

All this denotes a spirit of fair play and cooperation between the two professions.

It is to be hoped that there will not be too much "fifth column" activity going on within either profession which might result in loss of prestige and opportunities for the two professions.

I cannot let this opportunity pass without saying a word about what I believe is perhaps the greatest menace to the private practitioner in either the architectural or engineering profession.

The menace which I have in mind is the inroads which governmental bureaus are making in the fields which are normally covered by the private practitioner.

There is no question but that certain technical advice and supervision is required by governmental bureaus. This specialized service is beyond the comprehension and abilities of the ordinary public official and he needs to supplement his own ability with that of trained personnel.

In late years, there has been a constantly growing tendency for governmental bureaus, including federal, state, county and municipal, to expand their organizations in order to perform complete professional services in both the architectural and engineering fields.

Someone told me that there were over 12,000 architects and draftsmen working for the federal government alone. This is quite a number, especially when you consider that, at the present time, there are approximately 3500 members in the American Institute of Architects in the whole United States.

In my opinion, the engineering and architectural professions should cast aside all minor problems and immediately attack this growing octupus which, if unchecked, will extend its tentacles within striking distance of every member of our professions.

If we believe in a system of free enterprise and individual freedom, it seems that here is a place for us to unite in combatting a common enemy.

In closing, may I say that I have the greatest respect and highest regard for this kindred profession and for the high ideals and the spirit of fair play and professional ability of the individual members.

We are all members of a profession which is second to none in the amount of individual skill and technical knowledge which must be applied to successfully practice it.

We are young in joint cooperative efforts, in advancing the interests of our professions, but let us hope that the groundwork that has been laid will form a firm basis for future efforts.

Let us take advantage of the opportunity.

Let us make history so that our sons may carry on with a rich heritage.

Engineer's View (Steinman)

(From page 8)

records the following as the first of the four major planks in its program:

"(*a*) To develop further means for the educational and vocational orientation of young men with respect to the responsibilities and opportunities of engineers, in order that *only* those may seek entrance to the profession who have the high quality, aptitude, and capacity which are required of its members."

I have italicized the word "only," because it is the most important word for interpreting the intent and for gauging the sincerity of this program. With that word, the program means *selective enrollment;* without that word, the program means *enrollment promotion.* Euphemistic phrasing may obscure, but cannot change, this distinction.

I hereby challenge the E. C. P. D. to show its sincerity with respect to carrying out this announced program. The engineering educators are in control of E. C. P. D., and I predict that no program of selective enrollment will ever be recommended by E. C. P. D. The word "only" will be tacitly forgotten, and the meaning and purpose of that program will thereby be perverted. E. C. P. D. has an opportuntiy to demonstrate its honesty and good faith by proving my prediction to have been wrong.

In line with the four cardinal divisions of its program, E. C. P. D. has four standing committees, the first of which is the "Committee on Student Selection and Guidance." In its first annual report, this committee reported its conclusion that "Selection" was impracticable, and that its activities were to be concentrated on "Guidance." It has become virtually a "Committee on Student Guidance"—guidance *into* the engineering schools. It is all part of the program—including the distribution of promotional literature, addressing high-school students and their parents, and running "vocational guidance" camps—to stimulate additional enrollment in the engineering schools. Every suggestion of "Student Selection" is met with alibis, and is put off with a far-fetched quest for "aptitude tests" and "correlation coefficients."

Prerequisites for Admission

The obvious solution, appealing to common sense and conforming to the very foundation of all engineering study, would be to require all enrollment applicants to pass a college entrance examination in mathematics and physics. It is difficult to conceive how a student can profitably spend his four years in an engineering school without a preliminary mastery of at least these two high-school subjects. Of all pre-college studies, physics and mathematics are the most important and indispensable preparation for engineering study and application. The lack of this preparation must inevitably hold back proper progress in the engineering curriculum. The limited time in the usual four-year engineering course is too precious to spend in teaching elementary foundation subjects that should be thoroughly covered in the secondary school preparation.

In response to my repeated recommendations along this line, the chairman of the E. C. P. D. Committee on "Student Selection and Guidance" wrote me: "No doubt, you are correct in stating that mathematics and physics are the foundation subjects for all engineering curricula. . . . If we were to require high school physics for admission, it would necessitate a general agreement amongst the engineering colleges that this was necessary. *If one college required physics and others did not, the former would be faced either with a reduced enrollment* or with the acceptance of students who were deficient in physics. At the time of the investigation it was found that a considerable number of institutions admitted students deficient in mathematics. I hope and believe that the engineering colleges have moved forward from that position and that few are admitted who are deficient in mathematics." (The italics are mine. There is the crux of the problem. Competition for enrollment is always the first consideration, rather than the standards of the profession.)

It is also argued that the engineering schools can teach physics better than the high schools, but what a deplorable waste of time this is in the crowded four-year curriculum! A course in college physics is generally given in the sophomore year, but it has to start from scratch and proceed on a more elementary plane to accommodate those students who have not had the preparation of a course in high school physics. Less ground can be covered. The more advanced students are retarded, and the others do not make up for their handicap. The published report of the 1934-35 College Physics Testing Program clearly shows the marked difference in results on the Cooperative Physics Tests (measuring achievement in college physics) as between the students who studied physics in high school and those who did not. As the report states, "The group that studied physics in high school is consistently at or above the national average, while the other group is consistently below." This report also confirms the high correlation between proficiency in physics and engineering ambition or aptitude. As stated in the report, "Fig. 6 indicates, quite within expectations, that the group looking forward to engineering is higher in physics than any other pre-professional group. . . . The differences, after discounting all vitiating factors, are large enough to be suggestive of guidance possibilities."

The medical schools require all candidates for admission to have completed two, three, or four years of pre-medical study at a college of liberal arts and, as an additional requirement, to show specified numbers of credits successfully completed in college physics, college chemistry, college biology, physical chemistry and organic chemistry, before matriculation. Mastery of these *College* courses is established as part of the prerequisites for admission. The engineering schools hesitate to require even high school mathematics and high school physics. The individual school fears it will lose in the competition for enrollment if it adopts even these elementary and obvious standards. In the medical profession, the educators had vision and led in the progress toward higher standards and standing; in the engineering profession, the educators are resisting and retarding that progress.

Progressive Raising of Admission Standards

It is not my intention to be critical save for constructive objectives. With this thought, and with a full realization of the limitations of any individual approach to the problem, I offer as a basis for further consideration a rough outline of a possible program for the progressive raising of the standards of admission to our engineering schools. With each upward step in the pre-admission requirements, there would be a corresponding raising of the curricular and educational level within the engineering school. In such program, the following standards and prerequisites for enrollment might *successively* be adopted:

1. Standing in the upper half of the class in high school.
2. Completion of high school mathematics, including trigonometry.
3. Completion of high school physics.

4. Completion of high school chemistry.
5. Standing in the top-quarter of the class in high school mathematics and high school physics (or chemistry).
6. Passing of college entrance examinations in high school English, mathematics, physics, and chemistry.
7. Satisfactory completion of one year of pre-engineering study in the scientific course of a college of liberal arts and sciences, including successful completion of such specified subjects as analytical geometry.
8. Satisfactory completion of two years of pre-engineering study in the scientific course of a college of liberal arts and sciences, including successful completion of college physics, college chemistry, and calculus.

This tentative outline is, of course, subject to modification and improvement, and alternatives may be suggested. At the present indicated rate of progress, it may take many years or many generations to reach the goal I have set out. When it is reached, engineering education will still be far behind the standard now already attained by medical education.

Student Guidance

Under the guise of "student guidance," over 85,000 copies of "Engineering—A Career—A Culture" have been distributed by E. C. P. D. to high school students. With the title now changed to "Engineering as a Career," a revised draft has been prepared by engineering educators for distribution by E. C. P. D. Allure, inducement and persuasion are still emphasized, and anything that may deter enrollment is avoided. Apparently those connected with the engineering schools cannot overcome their deeply rooted habit of enrollment propaganda.

In justice to the prospective students and to the entire educational picture, what is needed is an objective and factual picture of the qualifications for a professional career and of what is in store for the prospective engineering graduate.

I believe that guidance literature should contain clear and emphatic paragraphs on "Who Should *Not* Study Engineering." This phase is now conspicuous by its absence.

I believe that guidance literature should scrupulously avoid allurement by misleading pictures of prospective monetary returns. I tell young men that no student should choose engineering as a career unless he knows in his heart that engineering is the only calling for him, despite the prospects of inadequate and uncertain material rewards.

I believe that the spectacular and the romantic should be avoided in presentations to prospective students and that instead they should be led to understand the nature of the severe discipline ahead of them and to make their decision with their eyes open to the realities.

I believe that those lacking in aptitude, capacity, preparation, ambition, determination, and strength of purpose should be diverted to other callings and other educational programs.

Because I am opposing enrollment propaganda and am advocating the diversion of the unqualified, I have been attacked and assailed by the engineering schools.

One educator attacks the idea of "ploughing under" future engineers. The surplus of engineering graduates are not future engineers. They are now "ploughed under," after graduation, by ruthless economic forces. It would have been elementary human charity to let them face the hard fact before enrollment instead of after graduation and to divert them to other callings before they devoted the four best years of their lives to study for a profession which they will never practice.

Sixty per cent of the students who enter our engineering colleges fail to graduate. Is not this equally a "ploughing under" of future engineers? One educator admits: "A number of poor students manage to struggle along in classes of capable students and finally pull through and are offered to the world as engineers." Then is selective guidance a heresy and are the acceptance and graduation of the incapable a virtue?

Another educator eloquently declares that "No boy with a God-given desire and ability to become an Engineer should be denied the opportunity." No one is proposing that any boy thus divinely qualified should be kept out. Any boy with a "God-given desire" will find his way in, despite any hurdles that may be set up; that type does not need any proselytizing or "vocational guidance" to induce him to apply for engineering school enrollment. And any boy with the "God-given ability" will not be kept out by any entrance examinations or aptitude tests that the educators will plan and conduct. It is the opposite type, without engineering ambition and aptitude, who should be diverted to other callings—as the best thing for these young men, their fellow students, and the profession as a whole.

Present Curricula

The present curricula of most engineering schools are, to me, a source of keen disappointment. Not only have these curricula failed to advance in line with increasing demands upon the educational equipment of the engineer, but in some respects there has been retrogression. Substitution, juggling, and shuffling of courses do not and cannot solve the problem so long as the schools cling to their low admission standards and to the arbitrary limitation of a four-year course of study after high school.

The average engineering-school graduate is not only an illiterate in English, economics, the humanities, and the social sciences, but he is also generally weak in mathematics and the physical sciences, sketchy in his understanding and grasp of his major branch of engineering, and extremely limited or ignorant in the other branches of engineering.

The first two years of the usual "engineering" curriculum are essentially pre-engineering. That cannot be otherwise when the students start with algebra and trigonometry in the freshman year, get their first course in physics in the sophomore year, and do not and cannot reach analytical mechanics until the junior year. This leaves only two years or less into which to crowd an engineering education. It simply cannot be done with any satisfactory results.

Natural and logical sequences of courses are sacrificed and upset by the enforced crowding of the curriculum.

The concentric principle of education—repeating an important basic subject on a higher level, with broader scope, and more intensively—has to be foregone.

Inclusion of the essentials of other branches of engineering is reduced to the vanishing point. The graduate in civil engineering is generally ignorant of thermodynamics, power, machine design, and electrical equipment; and the graduates in mechanical and electrical engineering are generally ignorant of stress analysis, structural design and foundations.

Within each major branch of engineering, important courses that should be a part of the educational equipment of the graduate have been crowded out of the curriculum

(Continued on page 24)

Federal Wage and Hour Law

DEFINITION OF "PROFESSIONAL EMPLOYE" AS PROMULGATED BY THE ADMINISTRATOR

(Editor's Note: In defining a professional employe, the Administrator has, by indirection, defined a "Profession." Our friends in the fields of Medicine and Law holding a license to practice, are exempted from the minimum fee or salary limitation of $200 per month, but licensed engineers are not included in such exemption. We would be glad to publish your comments on the subject.)

Section 541.3—Professional. The term "employe employed in a bona fide * * * professional * * * capacity" in section 13 (a) (1) of the Act shall mean any employe who is

(A) engaged in work

(1) predominantly intellectual and varied in character as opposed to routine mental, manual, mechanical, or physical work, and

(2) requiring the consistent exercise of discretion and judgment in its performance, and

(3) of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time, and

(4) whose hours of work of the same nature as that performed by nonexempt employes do not exceed twenty percent of the hours worked in the work-week by the nonexempt employes; provided that where such nonprofessional work is an essential part of and necessarily incident to work of a professional nature, such essential and incidental work shall not be counted as nonexempt work; and

(5) (a) requiring knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction and study, as distinguished from a general academic education and from an apprenticeship, and from training in the performance of routine mental, manual, or physical processes; or

(b) predominantly original and creative in character in a recognized field of artistic endeavor as opposed to work which can be produced by a person endowed with general manual or intellectual ability and training, and the result of which depends primarily on the invention, imagination or talent of the employe, and

(B) who is compensated for his services on a salary or fee basis at a rate of not less than $200 per month (exclusive of board, lodging, or other facilities); provided that this subsection (B) shall not apply in the case of an employe who is the holder of a valid license or certificate permitting the practice of law or medicine or any of their branches and who is actually engaged in the practice thereof.

RESOLUTION

New York State Society

WHEREAS the National Wage Labor Standards Act of 1938, generally known as the Wage Hour Act presented a problem of classification of professional groups and WHEREAS, the members of the New York State Society of Professional Engineers are engaged in professional engineering activities and WHEREAS the Wage Hour Administration under date of October 14, 1940, made public a ruling in which the term "professional," as used in the Act, is clearly defined "professionals," are not made subject to the Act. Therefore, be it resolved, that the New York State Society of Professional Engineers hereby expresses approval of the action of the administrator and be it further resolved that copies of the resolution be furnished to the Wage Hour Administration and to the National Society of Professional Engineers.

Parable of An Engineer

One day three men, a Lawyer, a Doctor, and an Engineer, appeared before St. Peter as he stood guarding the Pearly Gates.

The first man to step forward was the Lawyer. With confidence and assurance, he proceeded to deliver an eloquent address which left St. Peter dazed and bewildered. Before the venerable Saint could recover, the Lawyer quickly handed him a writ of Mandamus, pushed him aside, and strode through the open Portals.

Next came the Doctor. With impressive, dignified bearing, he introduced himself: "I am Dr. Brown." St. Peter received him cordially. "I feel I know you, Dr. Brown. Many who preceded you said you sent them here. Welcome to our City."

The Engineer, modest and diffident, had been standing in the background. He now stepped forward. "I am looking for a job," he said. St. Peter wearily shook his hand. "I am sorry," he replied; "we have no work here for you. If you want a job, you can go to Hell." This response sounded familiar to the Engineer and made him feel more at home. "Very well," he said, "I have had Hell all my life and I guess I can stand it better than the others." St. Peter was puzzled. "Look here, young man, what are you?" "I am an Engineer," was the reply. "Oh yes," said St. Peter, "Do you belong to the Locomotive Brotherhood?" "No, I am sorry," the Engineer responded apologetically, "I am a different kind of Engineer." "I do not understand," said St. Peter, "what on Earth do you do?" The Engineer recalled a definition and calmly replied: "I apply mathematical principles to the control of natural forces." This sounded meaningless to St. Peter, and his temper got the best of him. "Young man," he said, "You can go to Hell with your mathematical principles and try your hand on some of the natural forces there." "That suits me," responded the Engineer, "I am always glad to go where there is a tough job to tackle." Whereupon he departed for the Nether Regions.

And it came to pass that strange reports began to reach St. Peter. The Celestial denizens, who had amused themselves in the past by looking down upon the less fortunate creatures in the Inferno, commenced asking for transfers to that other domain. The sounds of agony and suffering were stilled. Many new arrivals, after seeing both places, selected the Nether Region for their permanent abode. Puzzled St. Peter sent messengers to visit Hell and to report back to him. They returned, all excited, and reported to St. Peter: "That Engineer you sent down there," said the messengers, "has completely transformed the place so that you would not know it now. He has harnessed the Fiery Furnaces for light and power. He has cooled the entire place with artificial refrigeration. He has drained the Lakes of Brimstone and has filled the air with cool perfumed breezes. He has flung bridges across the Bottomless Abyss and has bored tunnels through the Obsidian Cliffs. He has created paved streets, gardens, parks and playgrounds, lakes and rivers and beautiful waterfalls. That Engineer you sent down there has gone through Hell and has made of it a realm of happiness, peace and industry."

—Cosgrove's Magazine, May-June, 1940.

Engineer's View (Steinman)

(From page 22)

and are now available only to post-graduate students. The student is led to believe that he will get a complete engineering education in four years, and then upon graduation he is told that if he really wants to complete his education he must come back for more. I am not referring to more advanced, abstruse, or independent studies for the few, but rather to studies that have been and should be included in the regular curricula and the lack of which leave a gap in the technical equipment of the graduate. For example, a graduate in civil engineering who has had no courses in soil mechanics, foundations, rigid frames, and indeterminate structures, has not completed his technical education. More advanced and intensive studies in these fields are properly post-graduate, but first courses in these subjects belong in the undergraduate curriculum.

Pre-engineering courses, mathematics and the basic sciences, general engineering courses, adequate intensive preparation in a major branch of engineering, adequate courses in the related branches of engineering, English, economics, the humanities, the social sciences, human relations, industrial and financial relations, professional ethics and practice—how can all these things be crowded into a curriculum limited to four years after high school? The answer is—they cannot!

Lengthening the Curriculum

As far back as 1903, when the suggestion was made to a prominent member of S. P. E. E. that it might be well to extend engineering courses to five years, the reply was, "Young man, if you want to lose your job, just suggest a five-year course at your university."

After a number of universities had adopted five-year courses in engineering, the trend of progress was checked by an adverse report of an S. P. E. E. committee on this subject in 1927 and now again in 1940.

Here and there, an engineering school has been courageous enough to adopt a five- or six-year curriculum, or to arrange for one or two years of pre-engineering college work. Most of the engineering schools, however, have throttled any suggestion to raise their curricula toward a truly professional or graduate school level, preferring to remain on the lower plane where they could compete with the arts college, the forestry school, or the school of agriculture, for student enrollment.

On this subject one educator writes: "Prominent schools have adopted five- and six-year courses and have had to drop them, for they could not *compete* with schools of equal prominence that held to the four-year course. It would seem that there is little possibility of a long curriculum proving successful until all of the important schools of the nation make a concerted move for such a course." Again competition for enrollment appears as the governing consideration, rather than perfection of the educational training and its product.

I can see no alternative. The present curriculum is both inadequate and over-crowded. The curriculum must either be lengthened to five or six years, or must start at higher level if only four years are to be spent in the engineering school.

Broadening the Base

For years many of us have been urging a broadening of the base of engineering education. As "a voice crying in the wilderness," we have been pleading for a liberal education for the engineer, that he may better meet the changing and widening demands of society upon his capacity for service and that he may take his proper place among educated men in professional and public life.

I am not proposing that our engineering students be asked to study Latin and Greek, although such distinguished members of our profession as Michael Pupin and Hardy Cross have borne high testimony to their indebtedness to those studies.

But I am asking that the educational base for our engineering students be broadened beyond the technical, to include those liberalizing studies that will help our graduates to take their place as educated men and as members of an educated profession.

Our students need English (not merely "engineering English"), including literature, composition, and mastery of lucid and effective writing. And, with this, effective speaking must be included.

Our students need economics (not merely "engineering economics"), that they may have a more discriminating understanding of social, economic, and political trends, and a better grasp of the social and economic implications of their professional work.

Note:—Dr. Steinman's article will be concluded in our next issue.

The Spirit of The United States

Ever the freedom's
life-giving seed
blossoms in hope,
—surpassed by the deed.
—Ever the morning's
silvery stars
shine over dawnlights
rose colored bars.

Face then the future,
stronghearted gay,
—youth of the morning,
lord of the day.
Onward forever
forming thy fate,
—ready for friendship,
fearless of hate.

Great is thy power.
High is thy hope.
Guide then, where nations
falter and grope.
Break through the stormclouds;
lead by thy worth
on to the future
Eden on earth.

C. L. Christensen,
821 Riverside Drive,
New York City.

(Licensed Professional Engineer in New York State. Engr. Christensen was at one time in charge of the bridge designing organization of the Michigan Central Railroad, and was responsible for the design of the notable steel arch railroad bridge spanning Niagara.)